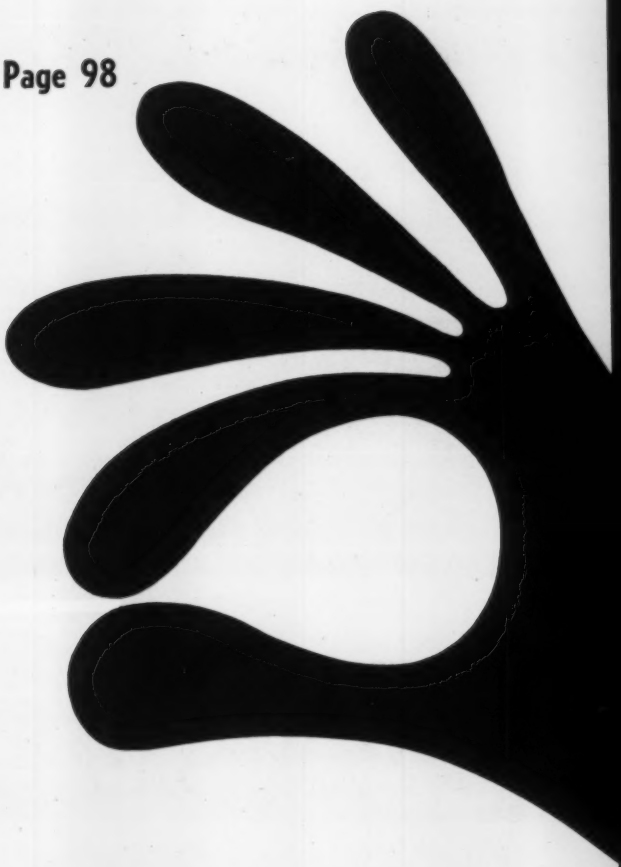
AUGUST 4, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

High Temperature Carburizing Doubles Production

Page 98



How To Win Arbitration Cases—Page 66

Metal Inventories To Begin Rise—Page 121

CONTENTS — PAGE 5

FIRST 2 OXYGEN CONVERTER INSTALLATIONS IN THE UNITED STATES EC&M CONTROLLED!

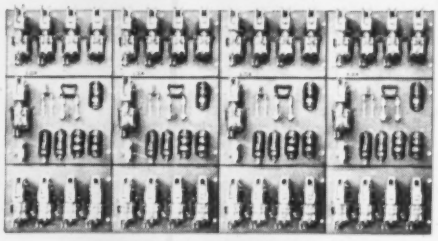
for basic steel making... it's EC&M CONTROL

EC&M control has proved itself by years of consistent performance in basic steel making processes —ore handling, hearth charging, ladle cranes, hot metal mixers, Bessemer converters.

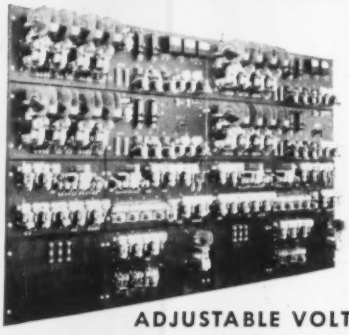
The same exacting standards of safety and efficiency have been designed into the EC&M equipment which controls the new Oxygen Converter process.

You'll find your nearby Field Engineer a source of sound counsel in solving any electrical control problem.

2 Types of Control for 2-Motor Vessel Tilt Drives

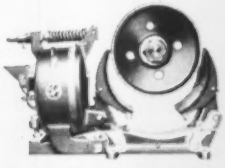


CONSTANT POTENTIAL



ADJUSTABLE VOLTAGE

1. Speed Control Master Switch



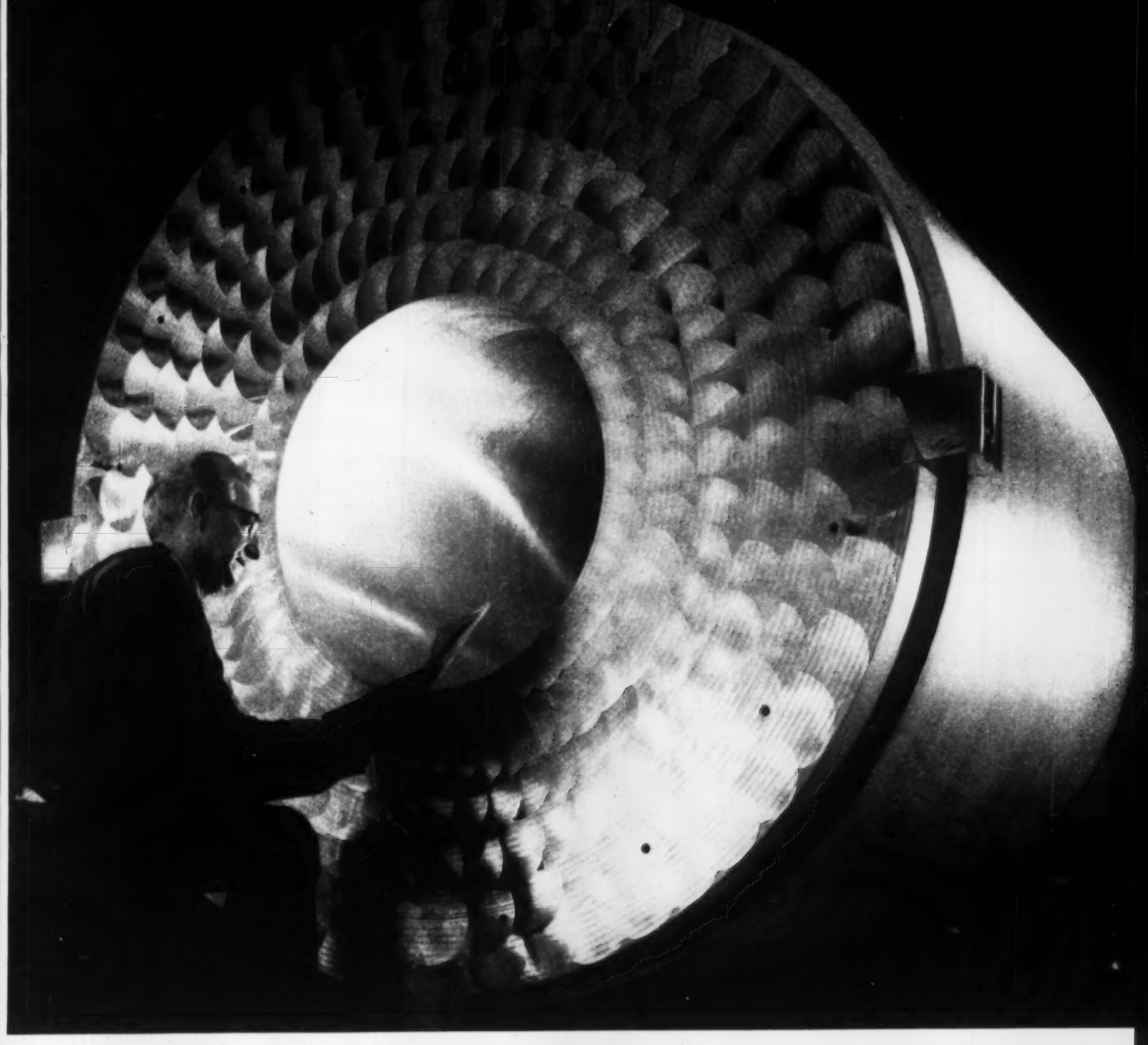
2. Dual-Coil Series or Shunt Wound Brakes

THE ELECTRIC CONTROLLER & MFG. CO.

A DIVISION OF THE SQUARE D COMPANY

CLEVELAND 28 • OHIO

8853



Three Layers of Forgings in 50-Ton Billet Container

This husky billet container, a product of Bethlehem's forge and machine shops, was recently completed after months of exacting work. It will be part of a 12,000-ton extrusion press designed and built by the Lombard Corporation, Youngstown, Ohio.

Though it looks like an ordinary one-piece forging, its appearance is deceptive. Actually, it's an assembly consisting of *three* cylindrical layers —an outer housing, an intermediate liner, and an inner liner. To get that one-piece effect, the most precise machining was required on the three components. Then came shrink-fitting—one of the touchiest steps of all—and later still, the finishing operations.

The container assembly as you see it here weighs 50⅔ tons. Its OD is 7 ft; ID, 32 in.; length, 6 ft 3 in. The two inner members are of chrome-molybdenum-vanadium-tungsten hot-work steel; the outer member is a chrome-molybdenum-vanadium steel.

Bethlehem facilities are always available for jobs of this nature, and we solicit your inquiries. We are especially well equipped to handle "unusual" orders, as well as the more conventional types. Remember, Bethlehem makes every kind of forging—large, medium, small—and offers precision machining that is unsurpassed anywhere.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

This man is tabling downtime indefinitely with SKF's new steel pillow blocks

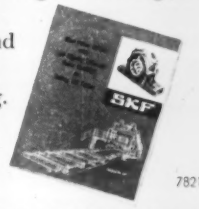
He's cutting bearing maintenance to a minimum yet drastically reducing the chances of table downtime! For he's equipping the mill tables with SKF's new SMT Steel Pillow Blocks with self-aligning spherical roller bearings.

The split construction design of these new pillow blocks makes it possible for rolls to be removed without disturbing base alignment. The non-rubbing, labyrinth-type seal effectively keeps out scale and water and is not affected by high temperatures.

The Type "C" Spherical Roller Bearing gives him the highest capacity available in any self-aligning roller bearing. This high capacity is available despite angular misalignment caused by heat warpage of the table structure or other factors promoting table misalignment.

He'll save with direct, center lubrication, too . . . because a lubricating groove is provided around the circumference of the outer ring of SKF sphericals with equally spaced holes drilled in the ring connecting the groove to the center of the bearing. Grease moves around the groove and through the holes which channel it directly to the center of the bearing.

Why not make the change-over to SKF Steel Pillow Blocks yourself? Write for Catalog #447.



7821

Spherical, Cylindrical, Ball, and "Tyson" Tapered Roller Bearings

EVERY TYPE—EVERY USE

SKF®

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

®REG. U. S. PAT. OFF.

How U. S. Steel Supply's Any Steel, Anywhere, Any Time Service

"cut handling costs 19%"

reported by
Mr. Myron Sage
vice-president
The Gledhill Road Machinery Company
Galion, Ohio

"Our former production schedule had five steps in steel handling before fabrication," says Mr. Sage, "but U. S. Steel Supply has reduced it to a single operation.

"We've shown substantial savings here, because now we're able to maintain a consistent production schedule. Through U. S. Steel Supply's Any Steel, Anywhere, Any Time Service, we get pre-cut sheets delivered right to our door on an over-night basis.

"Bothersome production delays such as storing steel, hauling it in and out of the plant, and cutting mill sizes to exact specifications are completely eliminated. For us, it has meant increased production and a higher plant efficiency."

Here's how this service can work for you!

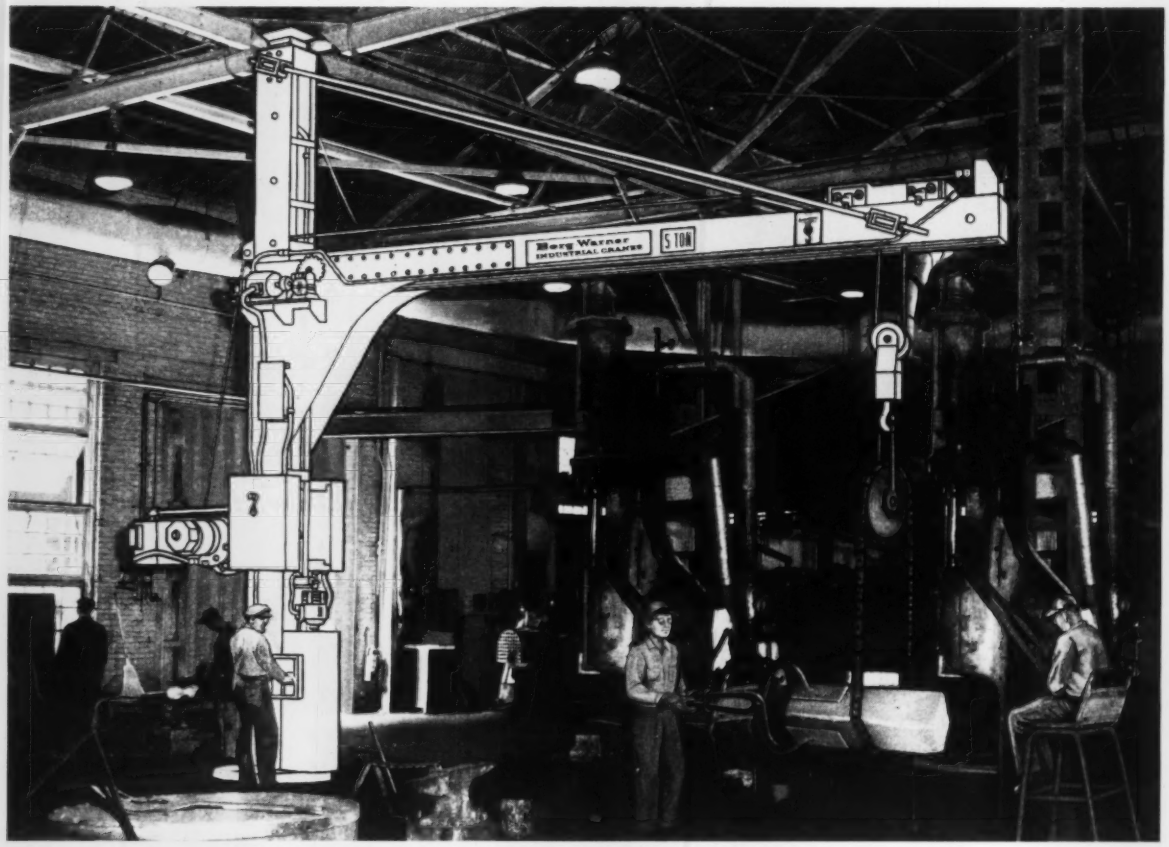
If you would like to see how other steel users are saving money and increasing profits as a result of Any Steel, Anywhere, Any Time Service, write to U. S. Steel Supply at the address below. There's a good chance our representative can help *you* eliminate idle equipment, increase production, and cut inventory costs.

Remember . . . you get Any Steel, Anywhere, Any Time Service from . . .

U. S. Steel Supply
Division of USS United States Steel

Steel Service Centers Coast to Coast
Mailing Address: P. O. Box 1099, Dept. D8, Chicago 90, Ill. · General Offices: 208 So. La Salle St., Chicago 4, Ill.

Borg-Warner® INDUSTRIAL CRANES installed by steel mill forge shop



mast type motor driven jib crane designed to take hard knocks

Here's how Borg-Warner Industrial Cranes solves a tough materials handling problem for a steel mill forge shop. Using a Borg-Warner mast type motor driven jib crane, the operator picks up a 5-ton steel billet and swings it into a gas furnace where one end is heated to 2400° F. Then the crane holds and positions the billet while it is forged in a 4000 lb. steam hammer.

Service like this gives a crane a *real workout!* This Borg-Warner jib crane meets the test because it's engineered and built to withstand the rigors of heavy forge shop duty. Special built-in coil spring shock absorbers in hook and cable insulate crane from impact of hammer blows, prolonging life of lifting mechanism. Mast and boom are all welded, boxed, diaphragmed and fastened together with rugged gussets. Driving gears and pinions are located at floor level for easy servicing. This Borg-Warner crane is equipped with multi-speed, mill type, full magnetic controls for perfect control of red hot forgings.

Features like this are typical of Borg-Warner Industrial Cranes superior engineering and construction that make every Borg-Warner crane best for the long run!

This is another in the versatile, complete Borg-Warner Industrial Cranes line. Whatever your materials handling needs, it will pay you to consult with Borg-Warner Industrial Cranes specialists. Write today.

Find Your Nearest Distributor Under CRANES In The Yellow Pages

Industrial CRANES I S

INGERSOLL PRODUCTS B-W BORG-WARNER

Borg-Warner® INDUSTRIAL CRANES

1550 S. PAULINA STREET, CHICAGO 8, ILLINOIS

Export Sales: Borg-Warner International, 36 South Wabash Ave., Chicago 3, Illinois

This Week in STEEL

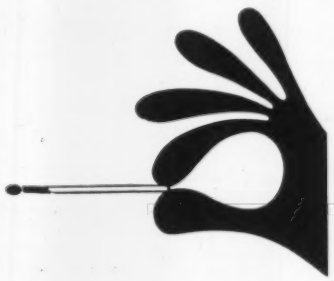
The Metalworking Weekly

August 4, 1958
Vol. 143 No. 5

EDITORIAL 53

Another reason for depreciation reform: A stronger industrial base to compete with the USSR.

SPECIAL FEATURE 98



High temperature carburizing is practical. Where you can use it, the process will increase production and decrease costs. Many of our carburizing steels are suitable for treatment at higher temperatures.

WINDOWS OF WASHINGTON 62

Efforts in capital to save machine tool industry from a rising tide of used tools appear doomed.

MIRRORS OF MOTORDOM 69

Rash of ideas in conventional springing systems may keep air suspension in the minority indefinitely.

THE BUSINESS TREND 73

The consumer can stop this recession, sales managers say, as they report steady gains in appliance demand.

WHERE TO FIND—

Behind the Scenes 6
Letters to the Editors 10
Editorial & Business Staffs .. 16
Calendar of Meetings 23
Men of Industry 77
New Products 111
New Literature 117
Advertising Index 149

Business— METALWORKING OUTLOOK 49

Bottom in Profits Reached—Climb should start in last quarter.. 55
Seaway Tolls Contested—Lake carriers oppose Welland charges 57
How To Plan Your Expansion and Modernization 59
Egypt Boosts Steel Industry—Gets first integrated plant 59
Rubbermakers Go Synthetic—Move will benefit metalworking.. 60
Reform Depreciation, Urges MAPI—To catch up with inflation 61
Cummins Controls Inventory—Operations research points way 65
Labor Arbitration Cases Up; How Management Can Win More 66
Consolidated Iron-Steel Acquires Foundry—Broadens operations 83

Production— TECHNICAL OUTLOOK 95

Flexibility Pays Off on Short Lots—Cost crisis story 95
High Temperature Carburizing Is Practical—It cuts time 98
Magnesium Dip Brazed Accurately—Valuable production tool.. 101
Vibrator Aids Testing—Shows up faulty soldered joints 102
Progress in Steelmaking—Automatic Pouring Ups Yield 104
How To Ship Long Rods—You can cut handling time and damage 106
There's No Waiting in This Line—Conveyors keep parts moving 108

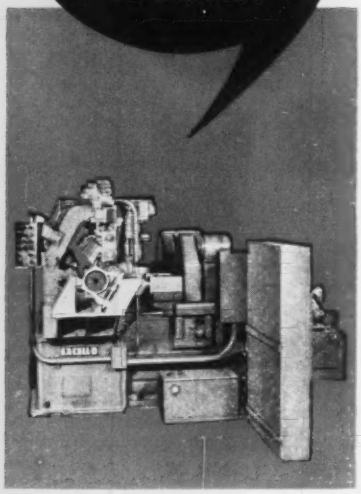
Markets— MARKET OUTLOOK 119

Complete Index to Market News and Prices 119
Inventory Reduction Tapers Off—Nonferrous users build stocks 121
Shipments of Tubular Steel Products 124
Steel Product Shipments for May 127
U. S. Imports of Iron Ore—March and first quarter figures 128
Steelwork Operation Chart and District Ingot Rates 128
Scrap Advancing with Ingot Rate 139
Nonferrous Metals—Barter Program Likely 144

STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1958 by Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

Index available semiannually. STEEL is also indexed by Engineering Index, 29 W. 39th St., New York 18, N. Y.

STEP-BY-STEP AUTOMATION WITH EX-CELL-O SPECIALS



Your first step into automation may cost much less than you think. In medium-sized shops, for example, a profitable, automated set-up may involve the purchase of a relatively simple transfer machine, such as the one illustrated above, consisting of two standard way-type units. Or, even more simply, a single standard machine which easily fits into automated set-ups later on.

In any case, a host of Ex-Cell-O engineers, laboratory technicians and production specialists are at your service. *No obligation whatsoever.* Call your Ex-Cell-O Representative or write Ex-Cell-O, Detroit.

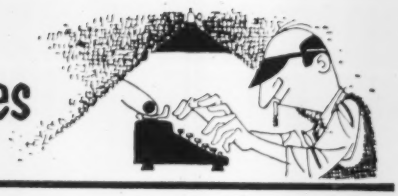
SEND FOR FREE BROCHURE

This 20-page catalog will show you the most profitable way to put automation into your present operations—make your own "Automation Appraisal." Ask for Bulletin 50155.

XLO *EX-CELL-O FOR PRECISION*
57-88

EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN

behind the scenes



Sheweth How One Maketh Iron

In the ever present possibility that you may be summoned to appear on a television quiz show, and in the added event that you might be asked to name the year in which the British Parliament passed the Townshend Acts, we would like to be of help: The year was 1767. What were the Townshend Acts? One of them had something to do with tea, which wound up in Boston harbor, but we don't care to talk about tea. Our subject is the Encyclopedia Britannica, hereinafter referred to as E.B., because if you were typing this, you'd think of a way to avoid typing it over and over again, too. Why, even when it's right, it looks wrong.

What was going on in 1767? Colonists were cursing Parliament. Parliament was scolding colonists. George Washington was 35 years old, and the prototypes of the editors of STEEL were attempting to describe to readers of the E.B. how iron and steel were made ten years before the American Revolution.

Considering those preliminary entries as evidence, neither the editors of E.B. nor their metallurgical correspondents appeared to be sure of what actually occurred when iron ore was reduced. Moreover, the report from the first edition, vol. 2, p. 133, of the E.B. on the subject "To separate iron from its ores," sounds more like an extract from an alchemist's diary than a scientific treatise.

The E.B. boys are aware of this, though. Make no mistake about it, they are on their toes at all times. The University of Chicago Press will soon publish a book about the history of E.B. on its 190th anniversary. Its author, Herman Kogan, uncovered the early reference to iron and steelmaking, and before you could say "Decrepitation of sea-salt in a crucible" three times, a New York public relations consultant, Ray Josephs, shot a letter to STEEL.

"Here's some hot stuff," said Joe, in effect. "It should make a really unusual feature."

Well, Joe, we mentioned the E.B., and its 190th anniversary, and the book about its history, so can we go now?

On The Ruble Standard

The letter was addressed to Editor-in-Chief Irwin Such, so he gave it to Editor Walt Campbell, and he gave it to Associate Managing Editor John Morgan, and he gave it to Assistant Editor Glenn Canary, and he gave it back to Morgan, and he gave it to Assistant Editor Eileen Cortes, and she gave it to Shrdlu. Such was really too busy to pay it too much attention because he was in the process of digesting his recent trip to Russia. As a matter of fact, when we inquired about the letter, he was studying a brand new ruble note.

"According to the official commercial exchange rate established by the Russians," he explained, "it is worth 25 cents. If you can get a travel visa to Russia, you will be given 10 rubles for every dollar. However, in the Free World market, the ruble is worth 2.6 cents. The minimum wage per month is about 350 rubles, but in a strategic industry like steel, the minimum is 750 to 800 rubles. Some get as much as 2600."

"$650 a month! Why, Gen. Robert E. Lee never earned that much."

"Yes, but General Lee didn't have to pay 700 rubles for a pair of shoes, 1600 for a suit, 1950 for a 10-in. television set, or 1150 for a small table radio."

"They didn't have radio and TV in those days—Wait! Don't throw that Russian dictionary! We'll go quietly."

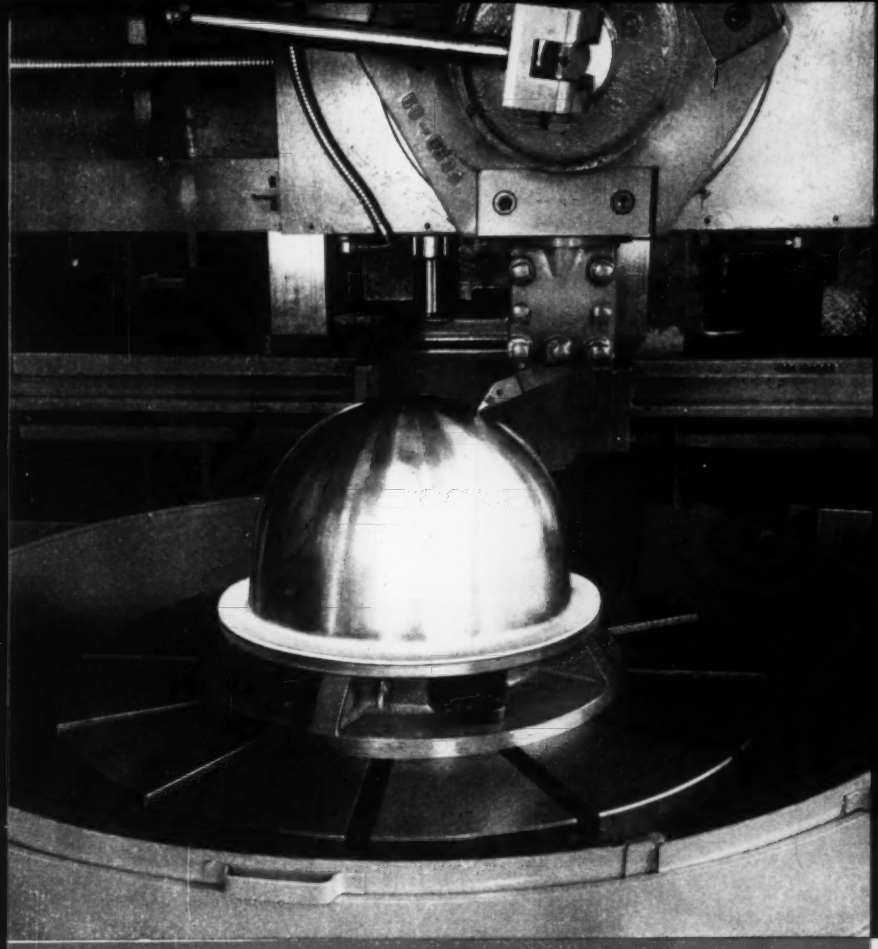
Book Reviewer Jumps in Lake?

A somber looking book fell on our desk one day last week (*Mathematical Programming*, by Nyles V. Reinfeld and William R. Vogel—which may or may not be German for N. V. Clearfield and Bill Bird). Clearfield—or, rather, Reinfeld is of particular interest to us because he has contributed many articles to STEEL. Having established the connection, we settled down to examine his book and got lost in the first chapter because it was all about the distribution method for solving mathematical programming problems. We skipped from Vogel's approximation method to the relation of Simplex to distribution, and then stood at attention for 2 minutes to honor the authors, and, incidentally, to recover our bearings.

While we stood, lost in thought, we considered the two marathon swimmers, Eustace and Franklin, who practiced their art in a mountain lake. They plunged in from opposite banks and swam at constant speed, but one was faster because he had webbed feet. On the first crossing they passed each other 720 yd from one bank. At the completion of the passage, each rested 4 minutes, then started back. This time they passed each other 400 yd from the other shore. Who had the webbed feet? How old was Franklin's mother? What was the temperature of the water? How wide was the lake? (One right answer out of four will earn you a pat on the head and a gold star.)

Shrdlu

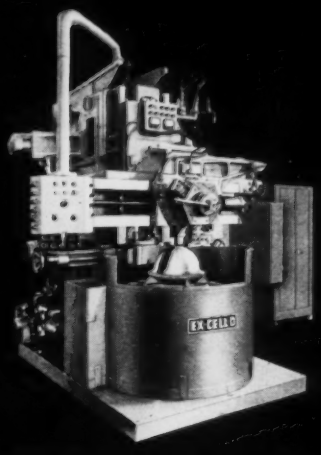
(Metalworking Outlook—Page 49)



XLO

EX-CELL-O FOR PRECISION

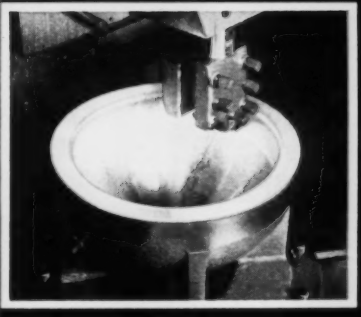
LEFT: Single tracer-controlled tool contours aluminum forging to .080" wall thickness holding .001" tolerance inside and outside.



ABOVE: Compact Vertical Contouring Machine handles medium or large workpieces. Slim cabinet at right side holds electronic tracer controls.

Critical Contour Tolerances?

HOLDS WITHIN .001' OF TRUE CONTOUR—INSIDE AND OUT



Close-up shows Style 416 contouring the inside surface. Workpiece is held in a vacuum fixture mounted on the machine table.

58-7

Contouring within .001" of true contour—inside and out—*without waste* requires the kind of precision built into an Ex-Cell-O Style 416 Vertical Contouring Machine.

The aluminum forging illustrated was first contoured on its periphery with a single electronic-tracer-controlled tool, then precision-finished inside to .080" wall thickness.

Designed for contouring hemispherical or irregularly-shaped surfaces, Ex-Cell-O Style 416 Machines also face, bore, turn, groove and chamfer with automatic cycling between loading and unloading.

Call your local Ex-Cell-O Representative, or write directly to Ex-Cell-O for information on other Precision Vertical Boring Machines.

EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN
Machinery Division

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING AND BORING SPINDLES CUTTING TOOLS • TORQUE ACTUATORS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

Another New Product from "Abrasive Tech"

Fast work . . . roughing the box ends of 1½" combination wrenches with 50-X RESINALL METALITE "91" Coat Cloth Belt.

Cuts "roughing" time in half!

Here's the newest, roughest, toughest, fastest-working abrasive for the metalworking industry — "91" Coat RESINALL METALITE Cloth. It's the answer to your demand for more production plus more mileage. And a "91" Coat Abrasive Belt cuts faster.

Prove it on your toughest job in your own plant or at your nearest "Abrasive Tech" Methods Room — ask for a demonstration.

BEHR-MANNING CO.

TROY, N.Y.

A DIVISION OF NORTON COMPANY NORTON ABRASIVES

BEHR-MANNING PRODUCTS: Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes
NORTON PRODUCTS: Abrasives • Grinding Wheels • Grinding Machines • Refractories
In Canada: Behr-Manning (Canada) Ltd., Brantford. For Export: Norton Behr-Manning Overseas Inc., Troy, N.Y., U.S.A.

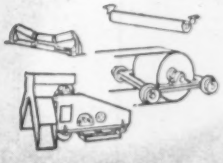
A-5

WHAT BUT A BELT CONVEYOR could carry this load for so few pennies a ton?

Moving at high speed—24 hours a day if required—belt conveyors handle huge tonnages in a continuous stream. Loading and unloading delays are eliminated, and there's no time lost on empty return runs. Operating costs are relatively low, based on cost per ton handled. In fact, economies of belt conveyor operation and upkeep generally top any other form of bulk material transportation. And thanks to their extreme flexibility, installation is easy even in difficult locations.

WHO BUT LINK-BELT offers such a complete belt conveyor service? For any requirement—new installation or modernization job—Link-Belt will plan it, equip it, erect it and stand behind it. Our engineers can choose from industry's most comprehensive idler line—plus a broad range of pulleys, drives, terminal machinery and auxiliary equipment. Because all drawings and equipment come from one source, responsibility is centralized . . . no need to waste valuable engineering man-hours coordinating drawings from several sources.

OVERALL ENGINEERING



COMPLETE EQUIPMENT

SKILLED ERECTION

ASSURED SATISFACTORY PERFORMANCE

Add to the basic economies of belt conveyors the extra advantages offered by Link-Belt—it's a formula producing lower costs per ton for all industry. Your nearby Link-Belt office can furnish complete information.

14,621

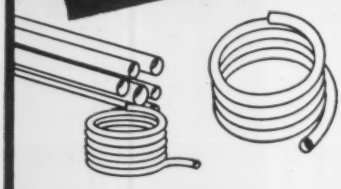
LINK-BELT

BELT CONVEYOR EQUIPMENT

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs.

Series 2

PLUS ITEMS
from your Whitehead Metals "Supermarkets"



PLASTIC PIPE

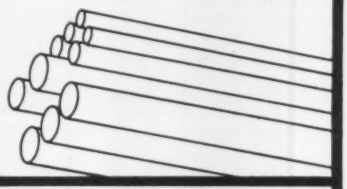
A full line of flexible and rigid plastic pipe and tubing in all commercial resins, in sizes from ⅛" to 4" OD. Fittings, cements and valves available from stock. Write for detailed literature.

NON-SKID ALUMINUM TREAD PLATE

Providing amazing gripping power (either oily or dry) this lightweight, corrosion resistant Alcoa product has a tough abrasive (fused aluminum oxide) rolled right into an aluminum base plate for longer wear. Available in four thicknesses —0.125", 0.188", 0.250" and 0.375" Write for descriptive booklet.

SHAFTING

Top quality shafting made of Monel, Everdur or Tempalloy. Originally developed for boats and other marine use, these shafts have gained wide industrial use in pumps and other machinery operating in corrosive atmospheres. Literature available.



WELDING FITTINGS

Stainless Steel forged welding fittings are stocked in I.P.S. sizes from ½" to 12" for Schedule 5S, 10S, 40S and 80S Pipe. All conventional shapes are on hand. Welding fittings are also stocked in Aluminum, Monel, Nickel and Inconel. Literature available.

DISSIMILAR METALS WELDING WIRE

A new item introduced at the 1958 Welding Show, Inco-Weld "A" Wire is a single product for inert gas welding of most combinations of dissimilar alloys. Technical Service and complete literature on request.

These "Plus Items" and many more are available in addition to a wide selection of corrosion-resistant sheet, rod and tube.

All told, there are more than 20,000 items distributed and serviced by Whitehead. All are available, off-the-shelf, from the nine Whitehead Metal "Supermarkets." All are the products of such leading producers as Alcoa, Anaconda, Inco & Crucible Steel to name just a few.

When you call Whitehead you get fast service, and frank, unbiased help in selection. Technical service when you need it. Add it up and you'll find it pays to

Call **WHITEHEAD**
METAL PRODUCTS COMPANY, INC.
First!

303 West 10th Street • N. Y. 14, N. Y.

Other Offices and Warehouses:
PHILADELPHIA • BUFFALO
HARRISON, N. J. • CAMBRIDGE, MASS. • SYRACUSE • BALTIMORE
ROCHESTER • WINDSOR, CONN.

LETTERS
TO THE EDITORS

Tax Structure Strangles Lifeline

Your article, "Plating Sales Are Slow" (July 7, Page 37) was nicely written but missed one of the most glaring and vexing problems of our industry: Government competition tied in with an inequitable tax structure which is strangling the job plater's lifeline.

Missing, too, was the ramification of prime and subcontractors' abuses of the Small Business Act on the job plating industry—not to mention many other woes which are contributing to the failures in our trade.

It is true that a few of our job shops have contributed to their own misfortunes. It is equally true that our present tax system has, in many instances, contributed much to these failures.

P. Peter Kovatis
Executive Secretary
National Association of Metal Finishers
Cedar Grove, N. J.

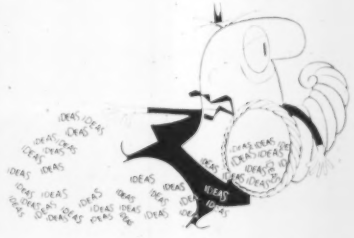
Why Print Packaging Article?

I would like two copies of the article, "Industry Takes New Look at Packaging" (July 14, Page 72). I would also be interested to know why you happened to run this article.

Bryant W. Langston
President
Samuel M. Langston Co.
Camden, N. J.

• *We ran the story because of the steadily growing importance of packaging for industrial products. We have carried many such articles over the last two decades. The most important major ones recently include: Dec. 23, 1957, Page 80; May 13, 1957, Page 80; Sept. 24, 1956, Page 65.*

Forecasting Customer Wants



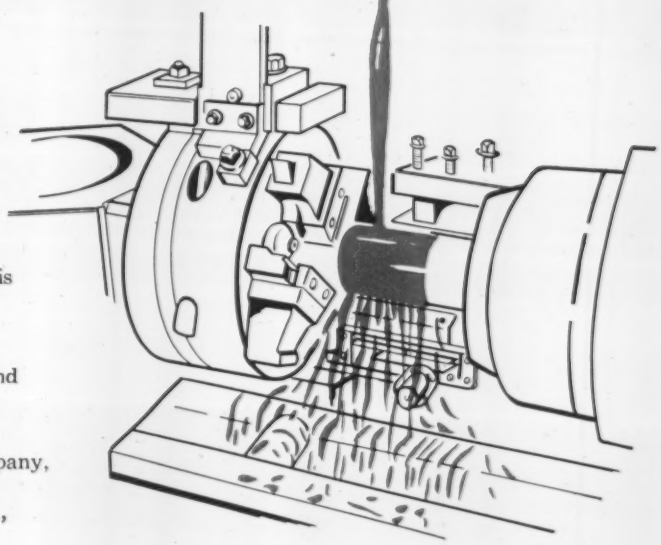
Your Program for Management article, "Finding Out What Customers Will Buy" (July 14, Page 101), is so well stated that I would appreciate having three copies—one for our general manager, one for our chief engineer, and the other for my own use.

Conception, production, and sales should parallel in some degree, at least. That is, there should be a reason for the new development; it should be produced in sufficient volume to fill wants; and sales should know not only who wants it

(Please turn to Page 12)

NEW HOCUT

NOW... a chemical coolant that excels in lubricity... film strength... rust protection



New HOCUT is a true solution, clear and transparent. It is clean and pleasant to work with, and causes no disposal problems. There is *no* petroleum in it. It cannot turn rancid or cause odors. It is fortified with a Houghton-developed high-molecular-weight lubricity additive. Work comes off the machine clean and protected from rust. Get the most modern of all coolants today—new HOCUT 237.

Call the Houghton Man who serves your company, or write direct to E. F. Houghton & Co., 303 West Lehigh Avenue, Philadelphia 33, Pa., for Product Data Sheet.

HOCUT

... a product of

E. F. HOUGHTON & CO.

PHILADELPHIA • CHICAGO • DETROIT • SAN FRANCISCO

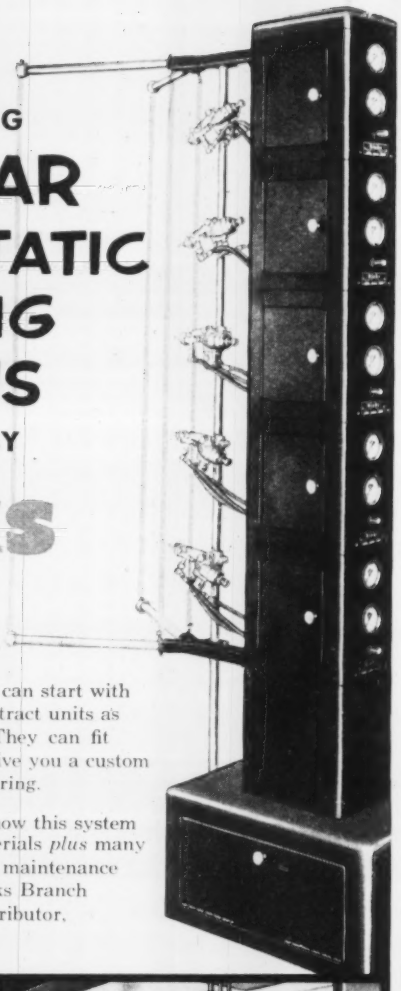
Ready to give you on-the-job service ...

INTRODUCING

MODULAR ELECTROSTATIC SPRAYING SYSTEMS

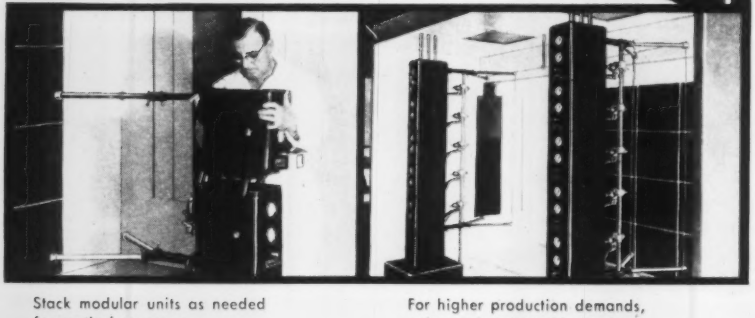
DEVELOPED BY

Binks



Binks-developed Electrostatic Spraying Systems are made up of MODULAR, self-contained spraying equipment packages. You can start with just the units you need—add or subtract units as production requirements change. They can fit into your present finishing line to give you a custom installation without special engineering.

All the facts in Bulletin E-1. Learn how this system can save you time, money and materials *plus* many unique installation, operation and maintenance features. Contact your nearest Binks Branch Office, Binks representative or distributor, or write direct.



Stack modular units as needed for vertical coverage.

For higher production demands, units are installed side by side.

Ask about our spray painting school

Open to all . . . NO TUITION . . . covers all phases.

8439

Binks

EVERYTHING FOR SPRAY PAINTING

SPRAY GUNS

MATERIAL HANDLING PUMPS

NATIONWIDE SERVICE

Binks Manufacturing Company

3122-30 CARROLL AVE., WEST, CHICAGO 12, ILL.

REPRESENTATIVES IN PRINCIPAL U.S. & CANADIAN CITIES • SEE YOUR CLASSIFIED DIRECTORY

LETTERS

(Concluded from Page 10)

but how much.

This article goes a long way toward telling the various means of obtaining such necessary information.

Thank you for compiling it.

J. C. L. Brown

Sales Manager
Machinery Div.
Gardner Machine Co.
Beloit, Wis.

Request from Germany

In your June 9 issue, the reports, "Process Upgrades Steel Parts" (Page 90) and "Electrical Steels: How To Choose and Improve Them" (Page 116), caught my attention. I would appreciate three copies of each. They will be of valuable assistance to many an executive in our company.

Martin A. Vetter

Deutsche Edelstahlwerke Aktiengesellschaft
Krefeld, Germany

Titanium in Space Age

We have read your article, "Titanium Gets Ready for Space Age" (July 14, Page 116). It is interesting, and we would like a reprint.

Milton Gallup

Chief Engineer
G. O. Carlson Inc.
Thorndale, Pa.

Article Interests P.A.

The article, "Stalemated? Try This Move" (June 30, Page 60), is interesting. I would appreciate a reprint.

J. F. Byrne

Project Purchasing Agent
Columbia-Geneva Steel Div.
United States Steel Corp.
San Francisco

Nonaging Steel Nearer

In the July 7 issue is the article, "Remedies for Steel 'Aging' Closer" (Page 38). May we have five copies?

L. J. Bednarczyk

Director of Purchasing
Ingersoll Products Div.
Borg-Warner Corp.
Chicago

Query from England

We would be grateful for further details on the work on ductile molybdenum by Poole and Nachtman, as described in your Technical Outlook of May 26 (Page 99).

D. Whale

Department of Technical Information
Tube Investments Ltd.
Birmingham, England

• *We suggest you get a copy of the patent, No. 2,834,671, from the U. S. Patent Office, Washington, or contact the patent holders: H. Gordon Poole (Head, Department of Metallurgy, Colorado School of Mines, Golden, Colo.) or J. S. Nachtman (Consulting Engineer, 2801 Quebec St. N. W., Washington, D. C.)*

Today's industries need Towmotor Continuous Operation

New functional body design introduced in the Towmotor "Pace-Maker" Series contributes greatly to trouble-free Towmotor Continuous Operation. New Model 680-P is shown above.

New "easy-off" hinged hood tilts back with seat – makes quick, convenient access to entire engine compartment possible – and without tools! Swift check-ups assured.

New planned-comfort features like adjustable off-center seating, extra leg room under cowl, and easy-reach controls increase the efficiency of Towmotor operators.

Use Towmotor **Continuous Operation** to Lower Your Production Costs!

Why are Towmotor fork lift trucks known world-wide for their ability to *keep on the go* —working around the clock to move goods faster through *every department*—increasing productivity and reducing production costs?

Towmotor operators can answer that. They may not say *"advance engineering"*—*"new functional design"*—or *"maintenance-free operation"*—in so many words. But that's what their praise adds up to when they talk about a Towmotor.

Leaders for 39 years in building Fork Lift Trucks, Tractors and Carriers

TOWMOTOR – **GERLINGER**
THE ONE-MAN-GANG

Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation, Cleveland 10, Ohio

You'll also hear lots about *"service that's there when it's needed!"* Over the years we have gone to great lengths to locate Towmotor-authorized service and parts depots close to every user. This helps to maintain the *continuous operation* of Towmotor fork lift trucks that is especially advantageous today. For complete details, send for our new "Pace-Maker" Booklet #SP-23.

☐ Send free Towmotor Booklet SP-23

☐ Send free Certified Job Studies relating to our business which is:

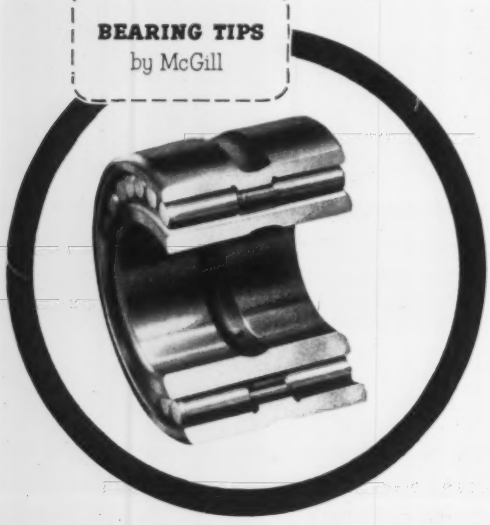
Name_____ Title_____

Company_____

Address_____

Mail to **TOWMOTOR CORPORATION**, Cleveland 10, Ohio

BEARING TIPS
by McGill



GUIDEROL® needle roller bearings save space and simplify design

. . . especially where their greater capacity can reduce the size and cost of an adequate bearing housing. More and more designers are specifying McGill GUIDEROL bearings to carry heavier loads dependably with smaller bearings.

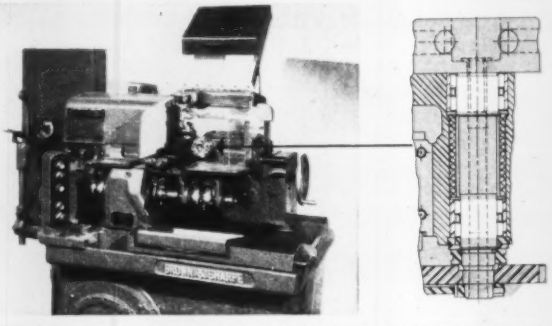
GUIDEROL bearings combine full type bearing capacity with center guided rollers that limit skewing and eliminate the possibility of binding under average misalignment. Especially suited to vertical mounting.

These precision heavy duty needle roller bearings are available with or without inner races in shaft sizes from ⅜" to 9¼". Specify the sealed series to keep out contamination and avoid relubrication.

Minimum clearance, maximum load capacity retained in automatic screw machine

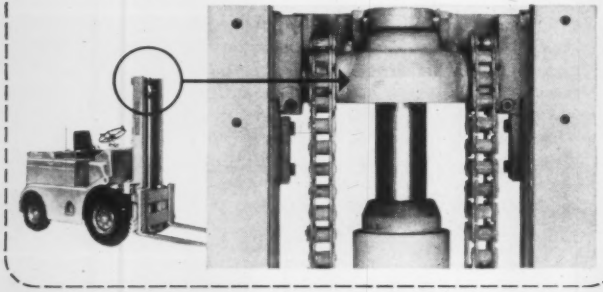
BROWN & SHARPE MFG. CO. replaced plain scraped bushings in the turrets of their No. 00 Automatic Screw Machines with McGill GUIDEROL bearings.

GUIDEROL bearings were selected to retain minimum clearance and maximum load capacity. In addition to meeting these requirements, the GUIDEROL eliminated production problems involved in the use of the scraped tapered bushings. The bearings support the turret during cutting and indexing operations. GUIDEROL design also satisfies the need for maintaining accurate alignment throughout long machine life.

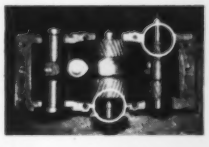


High capacity and compactness in lift truck chain cross-head rollers

GUIDEROL bearings support TOWMOTOR 6000 through 11,000 pound capacity lift truck payloads. They are used as chain crosshead roller bearings. Space requirements and the need for high capacity without the "walking" tendency of a straight needle roller bearing led to the selection of GUIDEROL bearings. GUIDEROL bearings have been rated very well in terms of length of life, maintenance and load carrying capacity in this application. Performance is rated excellent. The user reports reduced service requirements as compared with straight needle bearings formerly used.



Design simplified in mine machine transmission



Manufactured by the LONG Company, "PIGLOADER" coal loading machines feature full independent crawler control with a single motor. Application of GUIDEROL bearings on the tram clutch shaft is typical of other McGill bearing applications on the loader. GUIDEROL CT series bearings are used on the output end of the shaft to handle purely radial loads in small radial space. On the opposite end of the shaft, double row ball bearings handle combined thrust and radial loads. This combination eliminates the need for complicated adjustments. Use of a roller bearing, which has the same dimensions as the thrust bearing, accomplishes the design purpose with minimum machining variation in the transmission case. The GUIDEROL equipped tram transmissions allow each crawler to operate independently, a substantial design improvement.

engineered electrical products

McGILL®

precision needle roller bearings

SEND FOR CATALOG No. 52-A

MULTIROL — GUIDEROL — CAMROL

McGILL MANUFACTURING COMPANY, INC., 301 N. LAFAYETTE ST., VALPARAISO, INDIANA

SQUEEZE PLAY FAILS TO SCORE AGAINST WEIRKOTE

Crun-n-n-ch!

For brutal, iron-jawed pressure, a steam shovel has few equals. Here, in this crushing grip, Weirkote's zinc coating undergoes a murderous test.

Yet at every crease, at every tortured angle of this crumpled mass, the zinc remains an integral part of the steel. There is not one sign of flaking anywhere!

No wonder strenuous forming operations such as lock seaming are child's play, for Weirkote can be worked to the very limits of the steel itself!

No wonder parts fabricated from it require no painting, plating or redipping to guard against corrosion. Weirkote parts can be stamped, drawn or spun well in advance of use, and stored without danger of rust.

And NOW, Weirkote is treated to inhibit wet storage (white oxide) stain.

Why not find out what Weirkote's benefits can mean to you?

Free Weirkote Booklet! Send for all the facts on Weirkote. Write Weirton Steel Company, Dept. B-6, Weirton, West Virginia

WEIRTON STEEL COMPANY

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION

Cancer can't strike me, I'm hiding.

What I don't know won't hurt me.

Cancer?

Lots of people die of it, I know . . . but the American Cancer Society says a great many deaths from cancer are NEEDLESS deaths. That's why I do what they tell me. I have an annual medical checkup however well I feel. I know the seven danger signals. And when I want sound information, I get it from my Unit of the

AMERICAN CANCER SOCIETY

STEEL
The Metalworking Weekly

Editor-in-Chief, IRWIN H. SUCH
Editor, WALTER J. CAMPBELL
Associate Managing Editors, VANCE BELL, JOHN S. MORGAN

WILLIAM M. ROONEY .....Market Editor
ROBERT F. HUBER .....Machine Tool Editor
VAN CALDWELL .....Steel Plant Editor
HARRY CHANDLER .....Copy Editor
GLENN W. DIETRICH...Associate Copy Editor
FRANK R. BRIGGS .....Associate Editor
ROBERT O. JAYNES .....Associate Editor
ROBERT M. LOVE .....Associate Editor
AUSTIN E. BRANT .....Associate Editor
ROSS WHITEHEAD .....Associate Editor
GEORGE J. HOWICK .....Assistant Editor
G. MacF. TUTTLE .....Assistant Editor
H. GLENN CANARY .....Assistant Editor
THOMAS H. SMITH .....Assistant Editor
MARY T. BORGERHOFF .....Assistant Editor
MARY ALICE EARLY .....Assistant Editor
EILEEN CORTES .....Assistant Editor
MARY ANN STUVE .....Editorial Assistant

JANE WEDGE, Editorial Assistant
THOMAS H. BRYAN, TOM WELSH, Art Editors
IRENE KASNER, Editorial Service

Resident Editors

New York 17 .....60 E. 42nd St.
B. K. PRICE, L. E. BROWNE
BRIAN WILSON
Murray Hill 2-2581

Chicago 11 .....520 N. Michigan Ave.
ERLE F. ROSS, WILLIAM E. DEAN
Whitehall 4-1234

Pittsburgh 19 .....2837 Koppers Bldg.
WILLIAM V. WALLACE—Atlantic 1-3211

Detroit 35 .....15800 W. McNichols Rd.
A. DONALD POSTMA—Broadway 3-8150

Washington 4 ....1123 National Press Bldg.
JOHN R. BOTZUM—Executive 3-6849

Editorial Correspondents

Birmingham—Birmingham 3-1121 R. W. KINCEY
Buffalo—Emerson 5385 ....GEORGE E. TOLES
Youngstown—Riverside 7-1471..GEO. R. REISS
Los Angeles—Webster 5-1234..NORMAN LYNN
San Francisco—Yukon 6-5151 EDWIN HAVERTY
Seattle—Melrose 2-1895 .....R. C. HILL
Cincinnati—Beechmont 1-9607...DICK HAVLIN
Toronto, Canada—Empire 4-9655..F. S. TOBIN
Birmingham, England .....J. A. HORTON
Paris, France .....LEON JAUDOIN-PROM
Brussels, Belgium .....PAUL DE KEYSER
Dusseldorf, Germany ....DR. HERBERT GROSS
St. Louis—Garfield 1-1212, HAMILTON THORNTON

BUSINESS STAFF

Business Manager, D. C. KIEFER

Asst. Business Mgr.....C. A. TALLINGER JR.
Advertising Service Mgr. ...DORIS MITCHELL
Production Manager .....A. V. ANDERSON
Classified Advertising .....EVELYN DIETZ
Promotion Director .....S. F. MARINO
Market Research Mgr. ....T. M. BALLANTINE
Circulation Director .....J. C. GERNHARD
Distribution Manager .....G. R. EBERSOLE

Reprints, JUNE SCHILENS

Advertising Representatives

New York 17 .....60 E. 42nd St.
K. A. ZOLLNER, GUY LABAW
Murray Hill 2-2581

Wynnewood, Pa. (Phila.) 200 Wynnewood Ave.
WM. J. VERSCHOOR—Midway 2-6512

Farmington, Conn. .....12 Farmstead Lane
CALVIN FISHER JR.
Orchard 7-1756

E. Rochester, N. Y. .....217 Ridgeview Dr.
HAROLD A. DENNIS—Browning 2105

Pittsburgh 19 .....2837 Koppers Bldg.
J. C. SULLIVAN—Atlantic 1-3211

Cleveland 13 .....Penton Bldg.
J. K. GILLAM, N. W. MANNING—Main 1-8260

Cincinnati 6 .....2215 Victory Parkway
E. L. FRANKE—Parkway 1-0711

Detroit 35 .....15800 W. McNichols Rd.
C. A. TALLINGER JR., D. C. HYDE
Broadway 3-8150

Chicago 11 .....520 N. Michigan Ave.
L. C. PELOTT, W. L. POLAND
WM. J. D'ALEXANDER, RICHARD BIRDSONG
Whitehall 4-1234

Los Angeles 36 .....5943 W. Colgate Ave.
F. J. FULLER—Webster 1-6865

San Francisco 4 .....57 Post St.
Robert W. Walker Co.—Sutter 1-5568

Griffin, Ga. .....1106 Pine Valley Rd.
FRED J. ALLEN—Griffin 7854

Clearwater, Fla. .....1954 Jeffords Dr.
H. G. ROWLAND

Dallas 35 .....Exchange Park Bank Bldg.
JAMES H. CASH—Fleetwood 1-4523

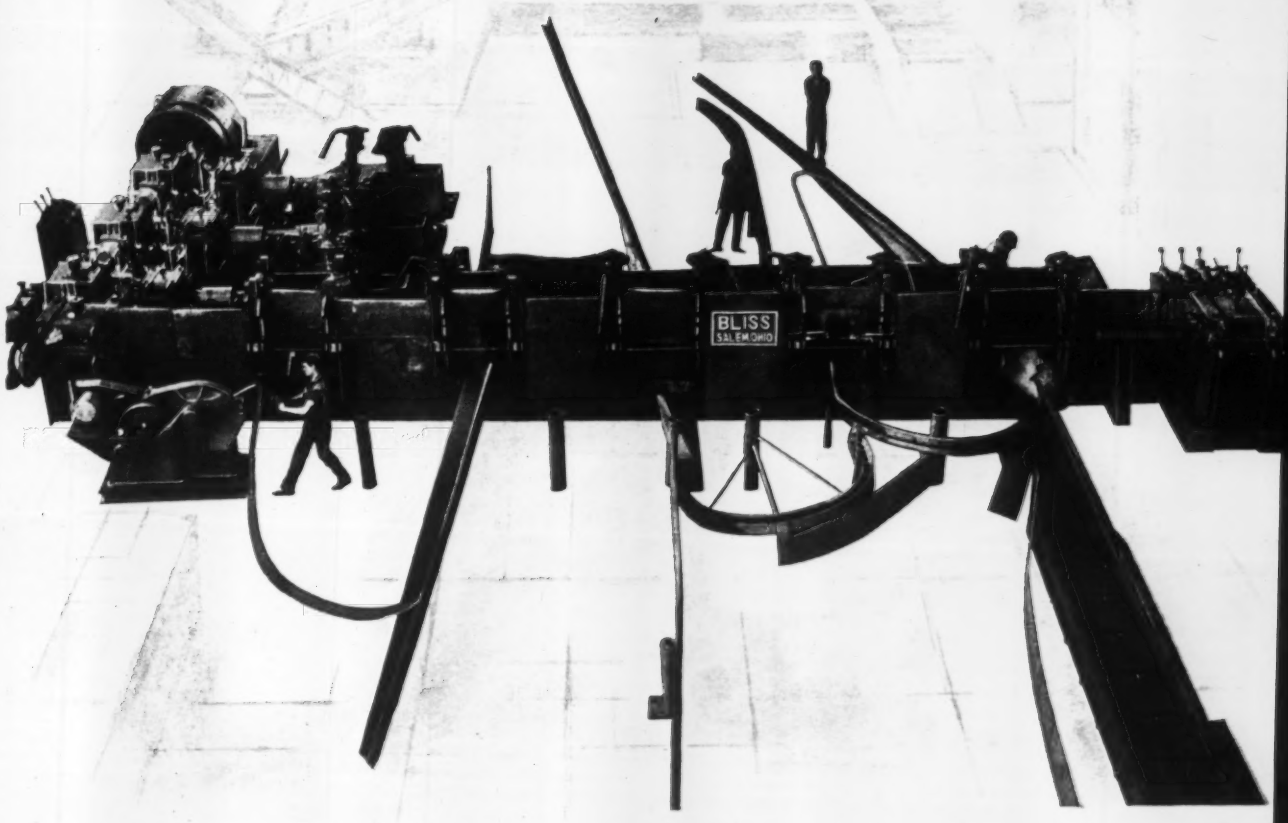
BPA

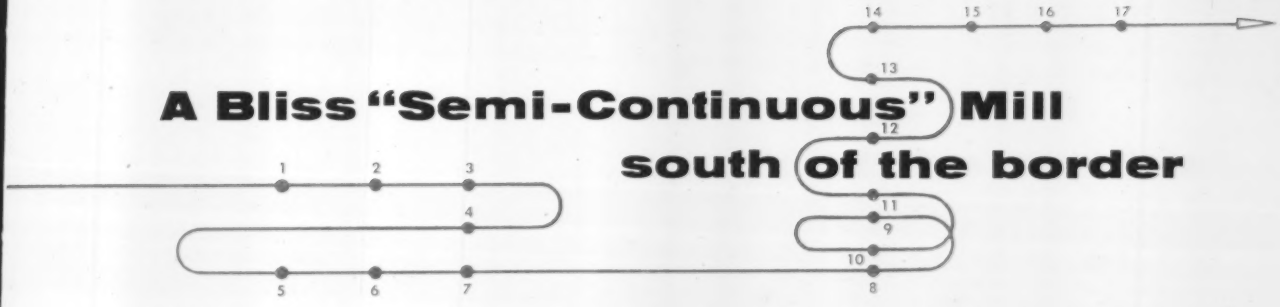
NBP

Published Every Monday by
THE PENTON PUBLISHING CO., Penton Bldg., Cleveland 13, Ohio
MAin 1-8260

GEORGE O. HAYS .....Chairman
RUSSELL C. JAENKE .....President
FRANK G. STEINEBACH .....Vice President and Secretary
FRANK O. RICE .....Vice President
JOSEPH P. LIPKA .....Treasurer and Assistant Secretary

Also Publisher of
FOUNDRY, MACHINE DESIGN, NEW EQUIPMENT DIGEST, AUTOMATION
Member of Business Publications Audit of Circulation Inc., Society of Business Magazine Editors, and National Business Publications Inc.





A Bliss "Semi-Continuous" Mill south of the border

Mexican cotton growers no longer need to import their baling strip, thanks to this new Bliss 11-stand Semi-Continuous mill recently put into operation by Aceros de Chihuahua, S. A.

Although the mill was primarily designed for production of narrow hot strip for cotton baling, Bliss and Aceros engineers designed it with an eye towards other uses too: as a result, the mill is suitable for production of rod and small shapes. Above all, it is simple to operate and easy to maintain.

Most of Aceros' requirements were handled by Bliss: the equipment moving billets in and out of the furnace, mill entry, the three stand tandem roughing mills, 12 x 30" and two 12 x 24" intermediate stands, a three-stand finishing train, and most of the auxiliary equipment, including repeaters, terminal equipment and scrap baller.

In essence, the mill represents the wedding of the best of American and Mexican steelmaking "know-how". In this as in so many other installations, Bliss "tailored" its mill to the particular needs of the operator. For other examples of Bliss mills around the free world, write for our new 84-page Rolling Mill brochure, Catalog 40-B.

BLISS
SINCE 1857 ®

Bliss is more than a name . . . it's a guarantee

E.W. BLISS COMPANY, Rolling Mill Division, Salem, Ohio

Subsidiary: The Matteson Equipment Company, Inc., Poland, Ohio

In *Ford* Farm and Industrial Tractors...

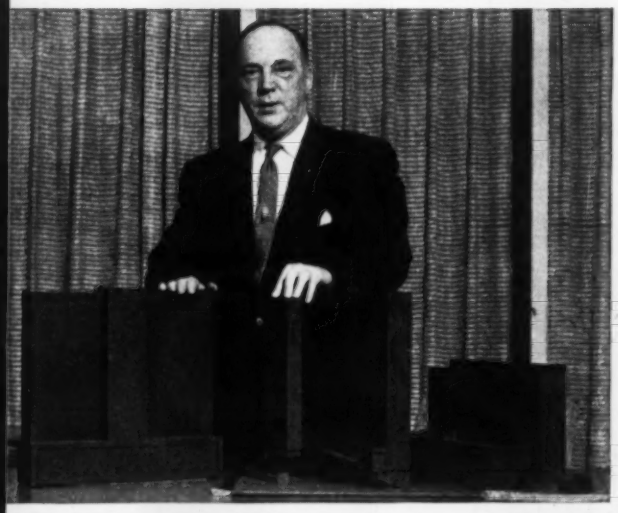
REPUBLIC DIE-FORM CUTS PTO COUNTER-SHAFT COST

FORD TRACTOR POWER TAKE-OFF COUNTER-SHAFT costs less to produce using a Republic Die-Form blank, as compared with previous materials. Shown below are blank (top) and complete shaft (at bottom). Use of Die-Form blanks may enable you to produce a superior part for less money. Clip and send coupon for facts.

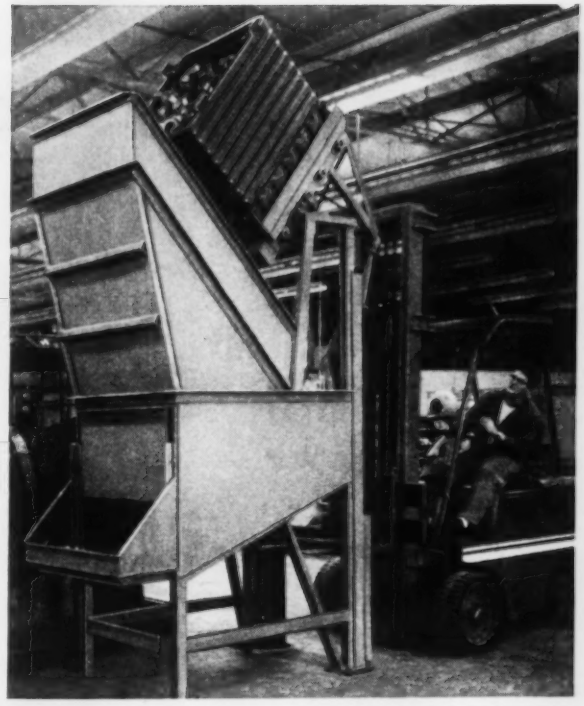
By using Republic Die-Form blanks to produce power take-off counter-shafts, Ford engineers gain substantial production economies. Because they closely approximate the completed part, Die-Form blanks minimize required machining and reduce handling costs for raw material and scrap disposal. In addition, the nature of the Die-Form Process actually improves machinability of any given steel analysis, permitting further savings through use of higher speeds and feeds.

The Republic Die-Form Process is a cold work operation performed by forcing one or more sets of dies over each end of a hot rolled steel bar. Resulting multi-diameter bar, in addition to the cost-saving advantages outlined above, offers improved yield and ultimate strength. Diameters are accurate to within .005 inches which may, in some cases, entirely eliminate further finishing.

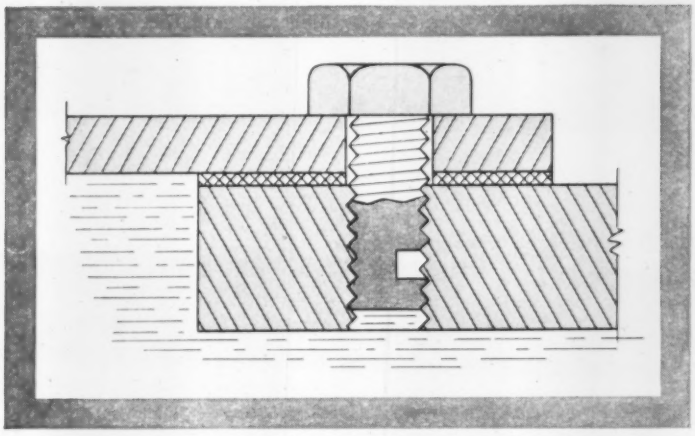
If you mass produce multi-diameter machine shafts it will pay you to investigate the savings potential of Republic Die-Form. Your nearest Republic office can provide details. Or write for Die-Form Folder ADV-746.



REPUBLIC ELECTRO PAINTLOK ASSURES TROUBLE-FREE PERFORMANCE for this unique, fully-automatic trap produced by the Self Sett Mouse Trap Company, Cleveland, Ohio. Electro Paintlok® proved superior to all other sheet products tested by Self Sett in meeting combined requirements for economy, formability, paint adherence, and corrosion resistance. Thanks to Electro Paintlok, trap life is expected to exceed 20 years with normal care. Republic Electro Paintlok offers all these advantages for *your* product. Send for facts.



REPUBLIC BOX AND SKID UNITS PERFORM FOUR JOBS, CUT HANDLING COSTS 10% at Dresser Industries' new pipe fittings plant at Wellsboro, Pennsylvania. Four functions are: (1) delivery of semi-finished parts to production stations; (2) feeding parts to machines via special hoppers; (3) receiving finished parts; (4) storage for shipment. In addition to immediate cost savings of 10%, Republic's rugged, corrugated steel construction assures years of minimum maintenance service. Send for data on Republic Materials Handling Equipment.



LIQUID SEALING PERFORMANCE is an added benefit of Republic Self-Locking Nylok® Bolts. As shown here, the nylon pellet in compression tends to expand and interrupt space between non-loadbearing surfaces of mating threads when bolt is wrenched tight. Fluid escape along helical thread path is blocked. Nylon pellet resists aging, moisture, and ordinary solvents to provide a long-lasting seal. Send coupon for information on all the benefits of Republic Nylok Fasteners.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. ST-5633
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

☐ Please send Republic Die-Form Folder ADV-746
Please send more information on:
☐ Materials Handling Equipment
☐ Nylok Fasteners ☐ Electro Paintlok Sheets

Name_____ Title_____

Company_____

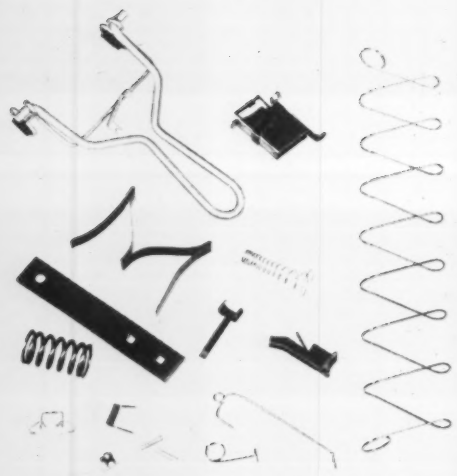
Address_____

City_____ Zone____ State_____

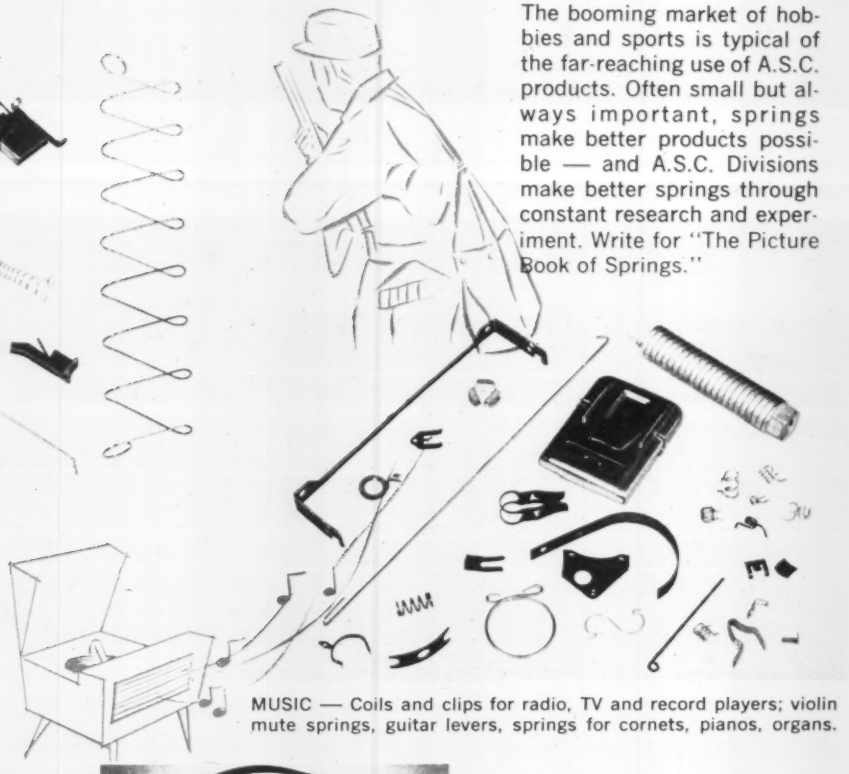
From Hunting to Hi-Fi . . .

There's a Spring in your Hobby

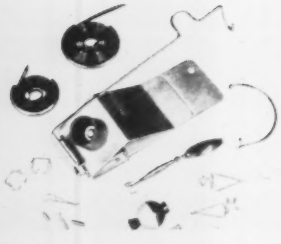
The booming market of hobbies and sports is typical of the far-reaching use of A.S.C. products. Often small but always important, springs make better products possible — and A.S.C. Divisions make better springs through constant research and experiment. Write for "The Picture Book of Springs."



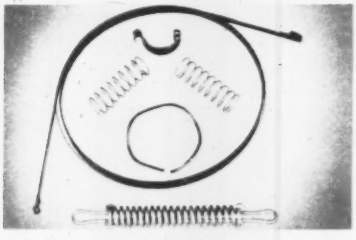
HUNTING — Ammunition clips, trigger springs and gun parts for civilian and military use; even a precision sling shot frame.



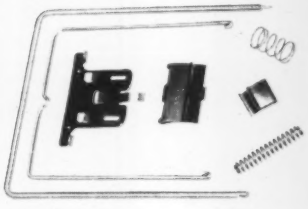
MUSIC — Coils and clips for radio, TV and record players; violin mute springs, guitar levers, springs for cornets, pianos, organs.



FISHING — power springs for reels; wire and flat springs for rod holders, lures; and a frog holder frame.



BOATING — starter springs and parts for outboard motors; shock-absorber spring for trailers; rope tightener spring.



PHOTOGRAPHY — view finder frames, shutter springs and stampings for movie and still cameras.

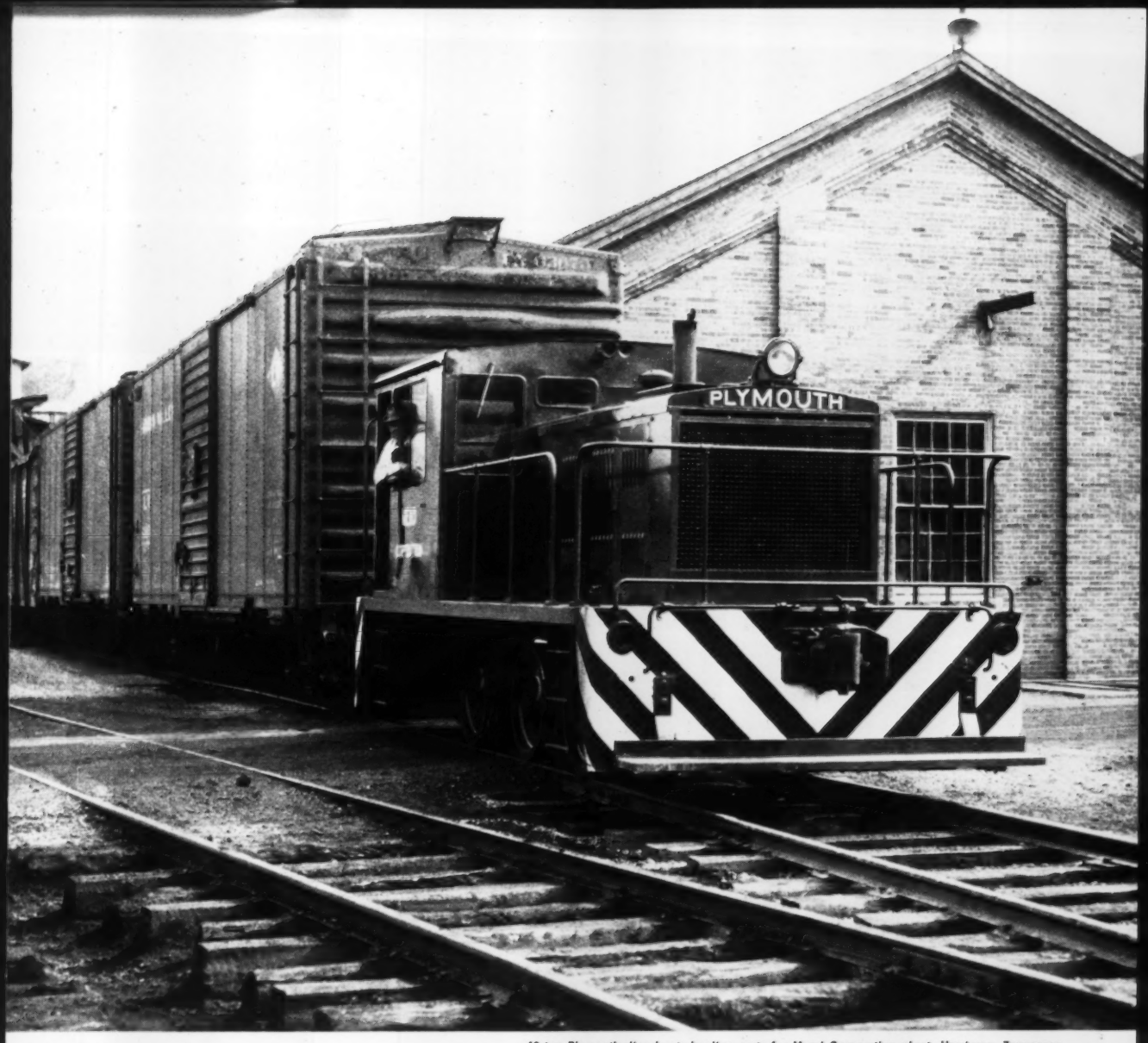
Associated Spring Corporation

General Offices: Bristol, Connecticut

Wallace Barnes Division, Bristol, Conn. and Syracuse, N. Y.
B-G-R Division, Plymouth and Ann Arbor, Mich.
Seaboard Pacific Division, Gardena, Calif.
Cleveland Sales Office, Cleveland, Ohio
Raymond Manufacturing Division, Corry, Penna.
Ohio Division, Dayton, Ohio
F. N. Manross and Sons Division, Bristol, Conn.
San Francisco Sales Office, Saratoga, Calif.
William D. Gibson Division, Chicago 14, Ill.
Milwaukee Division, Milwaukee, Wis.
Dunbar Brothers Division, Bristol, Conn.
Wallace Barnes Steel Division, Bristol, Conn.

Canadian Subsidiary: The Wallace Barnes Co., Ltd., Hamilton, Ontario and Montreal, Quebec

5813



40-ton Plymouth diesel cuts hauling costs for Mead Corporation plant, Harriman, Tennessee

"Plymouth diesel saves time, fuel, maintenance"

"Best locomotive we ever had" is the way the Harriman, Tenn. Division of Mead Corporation, user of steam-powered equipment for over 25 years, rates its 40-ton Plymouth diesel. Equipped with Torqomotive Drive for smoother starts and reduced engine wear, the company's new diesel is used 8-hours a day in switching and spotting; also hauls heavy loads quickly and safely over 3½ miles of standard gauge track with many curves.

Job-proved by continuous, trouble-free operation in a variety of tasks, Mead's Model WDT hauls loads faster, saves on fuel costs, requires less than 20 minutes per day for routine maintenance. New Plymouth unit is also rated much easier on the roadbed, and the operator. For complete information regarding a diesel-powered Plymouth designed to fit your haulage needs, send a brief outline of your operations to: The Fate-Root-Heath Company, Dept. A-1, Plymouth, Ohio.

RAIL POWER

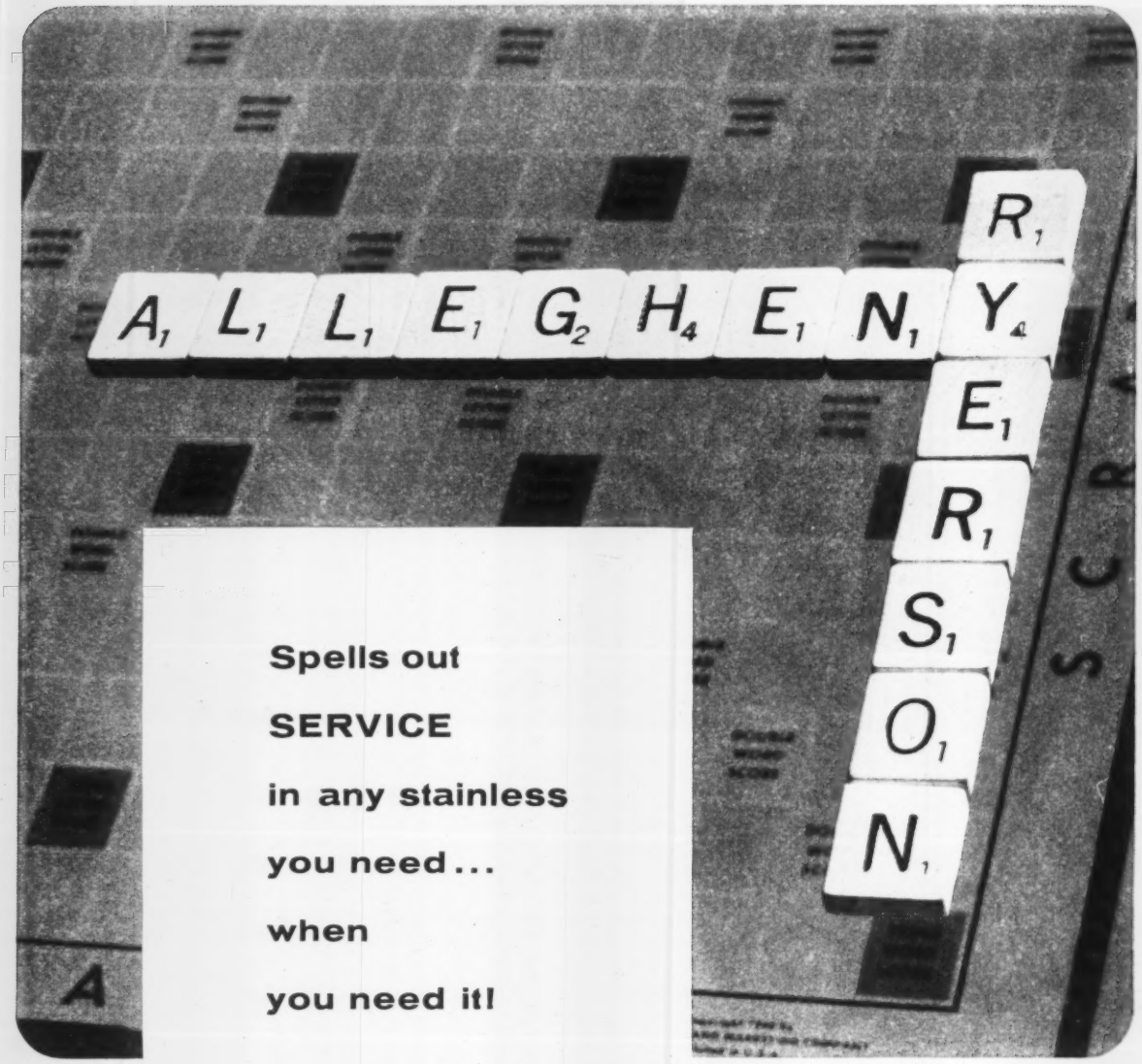
PLYMOUTH® LOCOMOTIVES

WITH TORQOMOTIVE DRIVE

ALSO BUILDERS OF F-R-H CERAMIC MACHINERY

PLYMOUTH LOCOMOTIVES in Progressive Industry throughout the world

Experience**—the extra alloy in **Allegheny Stainless



You can win only when you buy Allegheny Stainless from Ryerson. Two top names are teamed to give you quality stainless, the fastest way possible!

Allegheny Ludlum is the leading producer of stainless steels in all forms. Ryerson is recognized as the top steel service center. It's a team to bring you the best quality stainless, quick, when you need it.

Ryerson now stocks 2,351 shapes, sizes, finishes and alloys of Allegheny Stainless. It's the most complete line of stainless anywhere! And Ryerson takes the inventory cost from you, gives you as quick service as your own stockroom.

Whether your order is for Allegheny Stainless sheet, plates, bars, or whatever, Ryerson has it in stock. Trained salesmen and technicians to help in selecting or in fabricating are at your beck and call.

For top quality Allegheny Stainless from warehouse stocks, call Ryerson. *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.*

WSW-7126

ALLEGHENY LUDLUM

for warehouse delivery of Allegheny Stainless, call RYERSON

Export distribution: AIRCO INTERNATIONAL

EVERY FORM OF STAINLESS . . . EVERY HELP IN USING IT

CALENDAR
OF MEETINGS

Aug. 11-14, Society of Automotive Engineers: National west coast meeting, Ambassador Hotel, Los Angeles. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Aug. 19-22, American Institute of Electrical Engineers: Pacific general meeting, Hotel Senator, Sacramento, Calif. Institute's address: 33 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

Aug. 19-22, Western Electronic Show & Convention: Pan-Pacific Auditorium, Los Angeles. Information: WESCON, 1435 S. LaCienega Blvd., Los Angeles 35, Calif.

Sept. 7-12, American Chemical Society: National chemical exposition and conference, International Amphitheatre, Chicago. Society's address: 1155 16th St. N.W., Washington 6, D. C. Executive secretary: Alden H. Emery.

Sept. 8-11, Society of Automotive Engineers: Farm, construction, and industrial machinery meeting, production forum and engineering display, Milwaukee Auditorium, Milwaukee. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Sept. 10-11, American Die Casting Institute: Annual meeting, Edgewater Beach Hotel, Chicago. Institute's address: 366 Madison Ave., New York 17, N. Y. Secretary: David Laine.

Sept. 11-12, Refractories Institute: Fall meeting, Broadmoor Hotel, Colorado Springs, Colo. Institute's address: 1801 First National Bank Bldg., Pittsburgh 22, Pa. Executive secretary: Avery C. Newton.

Sept. 14-19, Instrument Society of America: Annual instrument-automation conference and exhibit, Convention Hall, Philadelphia. Society's address: 313 Sixth St., Pittsburgh 22, Pa. Executive director: William H. Kushnick.

Sept. 16-18, Electronic Industries Association: Fall meeting, St. Francis Hotel, San Francisco. Association's address: 1721 DeSales St. N.W., Washington 6, D. C. Secretary: James D. Secrest.

Sept. 17-19, National Industrial Conference Board Inc.: General marketing conference, Waldorf-Astoria Hotel, New York. Board's address: 460 Park Ave., New York 22, N. Y. Secretary: Herbert S. Briggs.

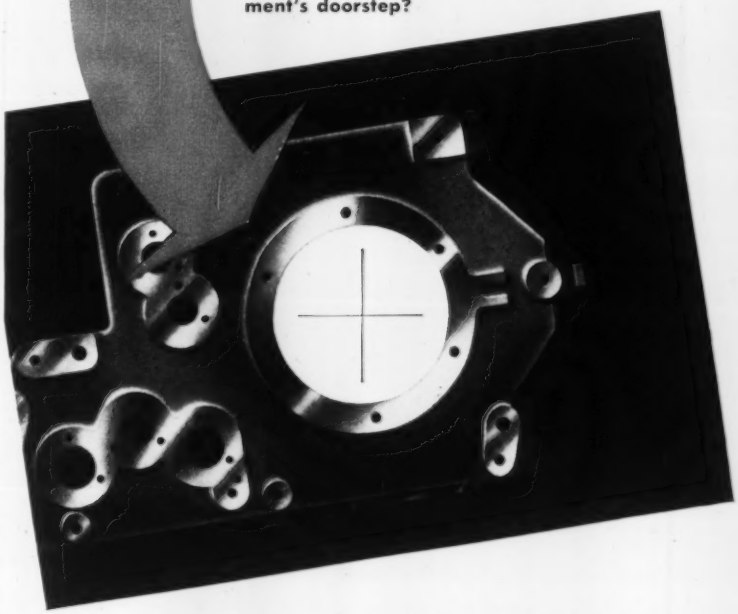
Sept. 22-23, Steel Founders' Society of America: Fall meeting, Homestead, Hot Springs, Va. Society's address: 606 Terminal Tower, Cleveland 13, Ohio. Executive vice president: F. Kermit Donaldson.

MANAGEMENT BLIND SPOT?

This bore looks perfectly acceptable. It checks okay. And yet this piece will be scrapped at assembly testing.

What's wrong?

And why — in the final analysis — will responsibility for the trouble end up at management's doorstep?



Other pieces with bores just like this one will find their way to the scrap pile, too . . . and many of those that don't will reach customers only to fail before their time — all because the gages that check them are providing **only a half-truth.** Nothing wrong with the gages themselves.

Trouble is, they are the wrong gages!

But it's been company policy that all bores should be checked with simple plug gages (which was all right before tolerances tightened). As a result, a critical out-of-round condition which is causing a poor fit between bore and shaft goes undetected, because these simple non-indicating gages **can't show it.** They were never designed to.

Only Indicating Gages can show conditions (out-of-round, taper, ovality, etc.) *as well as size* — in other words, give the **whole truth.** And although this company's management doesn't realize it, they are paying up right now for *not having indicating gages.* It won't be long before this policy blind spot eats into profits through customer dissatisfaction and lost sales.

Perhaps when the scrap figures reach the front office and the facts are sifted, management will decide to have a new look at its gaging policy. When it does, the job will be made easier . . . much easier . . . by calling in a Federal representative, a specialist who can show them, and you, where to get the most for your gaging dollar by having the **right type** of gage at the right spot. If you don't need an Indicating Gage, he'll say so. If you do, he can introduce you to the most complete and highly respected line of Indicating Gages available.

It costs nothing to invite him in . . . and most likely he can save you money. That's his specialty.

FEDERAL PRODUCTS CORPORATION
8218 Eddy Street • Providence 1, R. I.

Ask **FEDERAL** *First*

FOR RECOMMENDATIONS IN MODERN GAGES . . .

Dial Indicating, Air, Electric, or Electronic—for Inspecting, Measuring, Sorting, or Automation Gaging

Would you substitute price for dependability?

There is no substitute for dependability when choosing a producer of stainless steel.

Requirements are becoming more and more critical every day. Meticulous attention to every detail of production is essential. There can be no short-cuts.

You can depend on Carlson to produce the highest quality stainless steel plate; to maintain large stocks of finished plate and heads; and to continue a long record of efficient service.

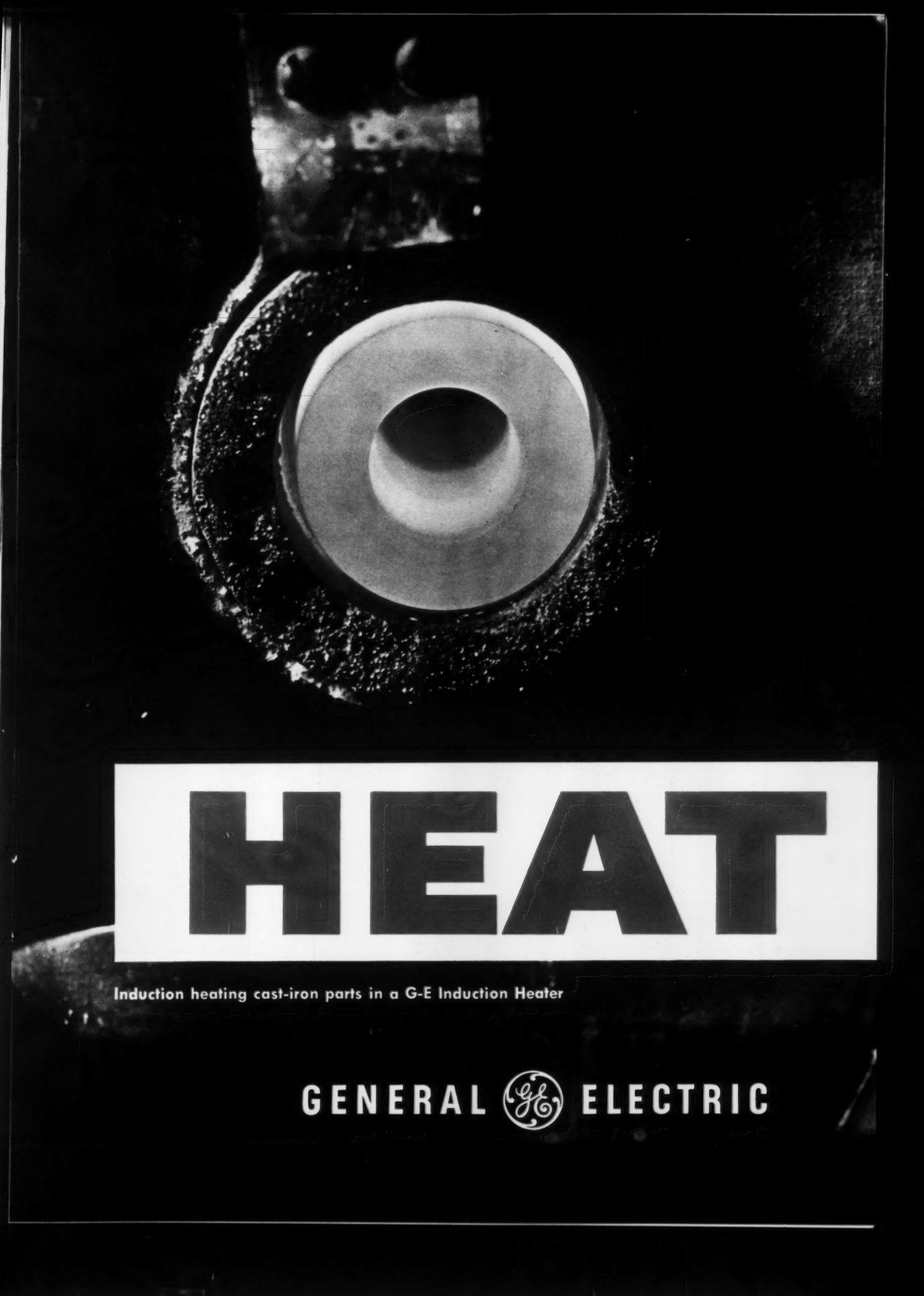
Most of all, you can rely on our established policy of delivering the highest quality stainless steel at competitive prices. And we never make special arrangements that deviate from this policy.

G.O.CARLSON *Inc.*

Stainless Steels Exclusively

THORNDALE, PENNSYLVANIA

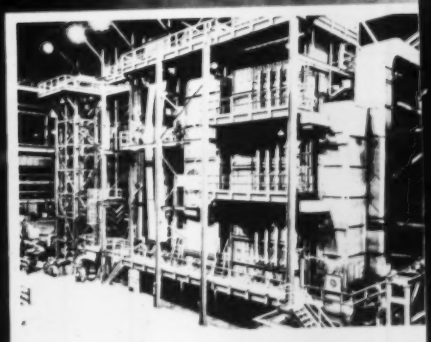
PLATES • PLATE PRODUCTS • HEADS • RINGS • CIRCLES • FLANGES • FORGINGS • BARS and SHEETS (No. 1 Finish)



Induction heating cast-iron parts in a G-E Induction Heater

GENERAL ELECTRIC

HEAT



1. GAS/ELECTRIC tower furnace uses economical coke-oven gas.

. . . ENGINEERED BY GENERAL ELECTRIC ASSURES YOU LOWEST-COST HEAT SOURCE

A complete line of electric and gas-fired furnaces and induction heaters enables General Electric's qualified Heating Specialists to give you an unbiased solution to your heat treating problems.

Because General Electric supplies all types of Industrial Heating equipment including gas-fired and electric furnaces, induction heating units, and protective atmosphere producers and control, they can tailor a heat treating system for you which best meets your requirements. You get low first cost and low operating costs which will help pay for your system in two or three years and make substantial contributions to profit when the equipment is paid for.

Here are four examples of results achieved through heat systems engineered by General Electric (pictured below):

1. **EXTRA ECONOMY** is achieved by using coke-oven gas, a by-product of other manufacturing processes, in the gas-fired heat-up section of this new General Electric tin-plate annealing furnace. Electric heat is used to achieve close control of the holding and cooling sections.

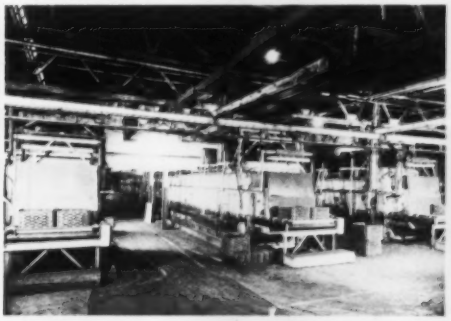
2. **ADDING SUPPLEMENTARY BATCH FURNACE** capacity to handle special loads of copper wire at lower cost, this manufacturer found that gas was now his best buy, so he chose a General Electric gas-fired cylindrical bell furnace and endothermic gas atmosphere producer.

3. **REPLACING OIL-FIRED BATCH FURNACES** with two continuous G-E electric roller hearth furnaces, a Midwest foundry cut its cycle from 4 days to 48 hours, cut man hours by 40%. They report a 35% return on investment and have recently added a third General Electric furnace of the same type.

4. **SCRAP LOSSES WERE CUT FROM 35% TO 2%** with a G-E electronic induction heater used for brazing electric-switch housing and jet engine components. Resultant savings in manpower, materials and machine time have helped pay for the General Electric installation. Higher quality products are produced.

YOU CAN ACHIEVE RESULTS LIKE THESE with a heat modernization system engineered by General Electric to fit your needs. If you suspect that obsolete heat processing equipments are robbing you of profits, call your G-E Apparatus Sales Office. A qualified Heating Specialist will be glad to discuss your opportunities for potential savings and profits. Why not call today? Section 721-13, General Electric Company, Schenectady 5, New York.

2. RATE COMPARISONS showed gas furnace to be best buy.



3. ELECTRIC FURNACES cut cycle from 4 days to 48 hours, cut manhours 40%.

4. INDUCTION HEATER cut scrap losses from 35% to 2%.

GENERAL ELECTRIC

ALL OF THIS LITERATURE IS AVAILABLE FROM GENERAL ELECTRIC

- ☐ Furnace and Induction Brazing, GEA-5889
- ☐ How and where to use Electric-furnace Brazing, GEA-3193
- ☐ How to Braze Stainless Steel, GER-1331
- ☐ Heat Treating Aluminum, GEA-5912
- ☐ Annealing of Malleable Iron, GEA-5797
- ☐ How to Get the Best Results from Sintering Furnaces, GER-978
- ☐ Temperature Control of Heat Treating Furnaces, GER-1206
- ☐ Protective Atmospheres for use with Industrial Furnaces, GEA-5907
- ☐ New General Electric Induction Heaters, GEA-6388
- ☐ Catalog of General Electric Heaters and Devices, GEC-1005

SECTION 721-13
GENERAL ELECTRIC COMPANY
SCHENECTADY 5, NEW YORK

Please send me the following bulletins.

GEA-....., ..., ..., ..., ...,

GER-....., ..., ..., GEC-.....,

NAME.....

TITLE.....

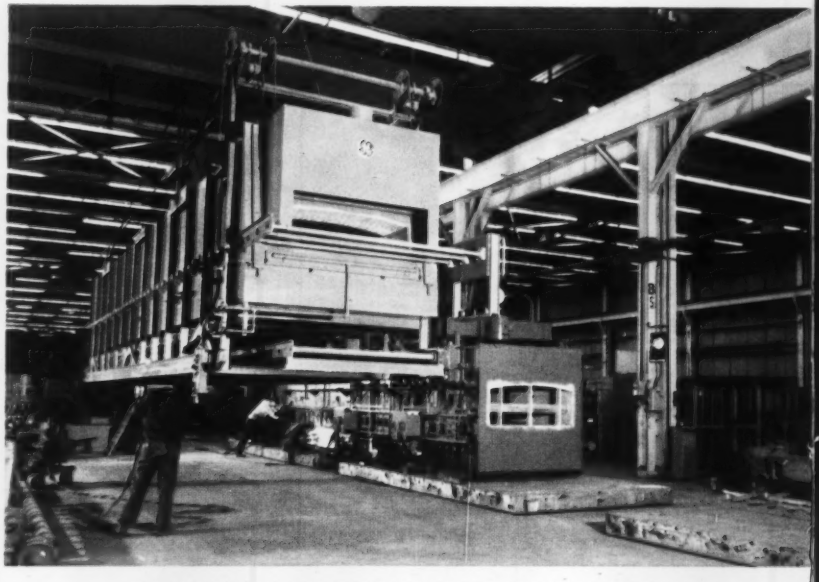
COMPANY.....

ADDRESS.....

CITY..... STATE.....

G-E MATERIALS HANDLING SYSTEMS SPEED PRODUCTION

Modernization and mechanization of heat processing systems speed production, give uniformity of product, improve quality, and reduce your manufacturing costs. General Electric can supply materials handling equipment, atmosphere producers, instruments, quenching equipments and furnaces or induction heaters to give you "one source" responsibility for your heat treating line.



FACTORY ASSEMBLY REDUCES YOUR INSTALLATION TIME

General Electric can completely assemble large furnaces in its Shelbyville, Indiana plant. This means that when you buy from General Electric you can have your piped and wired furnace on the line more quickly and with lower over-all first cost. Experienced furnace builders handle every step of construction and General Electric provides either supervision or complete installation at your plant.

Progress Is Our Most Important Product

GENERAL ELECTRIC

A 3M Case History Report

CONTOUR POLISHING

DEBURRING-POLISHING TIME CUT 40% WITH "PG" WHEELS

MANUFACTURER: LeTourneau-Westinghouse Company

ADDRESS: Peoria, Illinois

PRODUCT MANUFACTURED: Earth Moving Equipment

3M ABRASIVE USED: "PG" Wheels

HOW 3M ABRASIVES ARE USED: "PG" Wheels used for contour polishing of air brake backing plate. Malleable cast-iron plate requires super-smooth finish on two concentric rings, to provide air-tight seal against neoprene air diaphragm.

OPERATIONAL DATA ON 3M METHOD: Two 1" x 10" "PG" Wheels, Grit #150 Three-M-ite Resinbond Cloth, mounted side-by-side on shop-made polishing shaft uniformly deburr and polish plate ring surfaces in 2-3 minutes.

OPERATIONAL DATA ON PREVIOUS METHOD: Overall deburring and polishing was by hand-rubbing with emery cloth. Time required was 4-6 minutes per plate.

PROVEN ADVANTAGES OF 3M METHOD: "PG" Wheel method, as opposed to hand finishing, allows more uniform finishing as abrading pressure can be more constantly applied with machine. Average time saving of 40% realized.

WANT MORE INFORMATION? Send for free manual, "Modern metal finishing with 3M 'PG' Wheels." Write to 3M Co., St. Paul 6, Minn., Dept. GJ-88.

"PG" Wheels are manufactured in U.S.A. by 3M Company, St. Paul 6, Minn. Export: 99 Park Avenue, New York. Canada: London, Ontario

3M Coated Abrasives

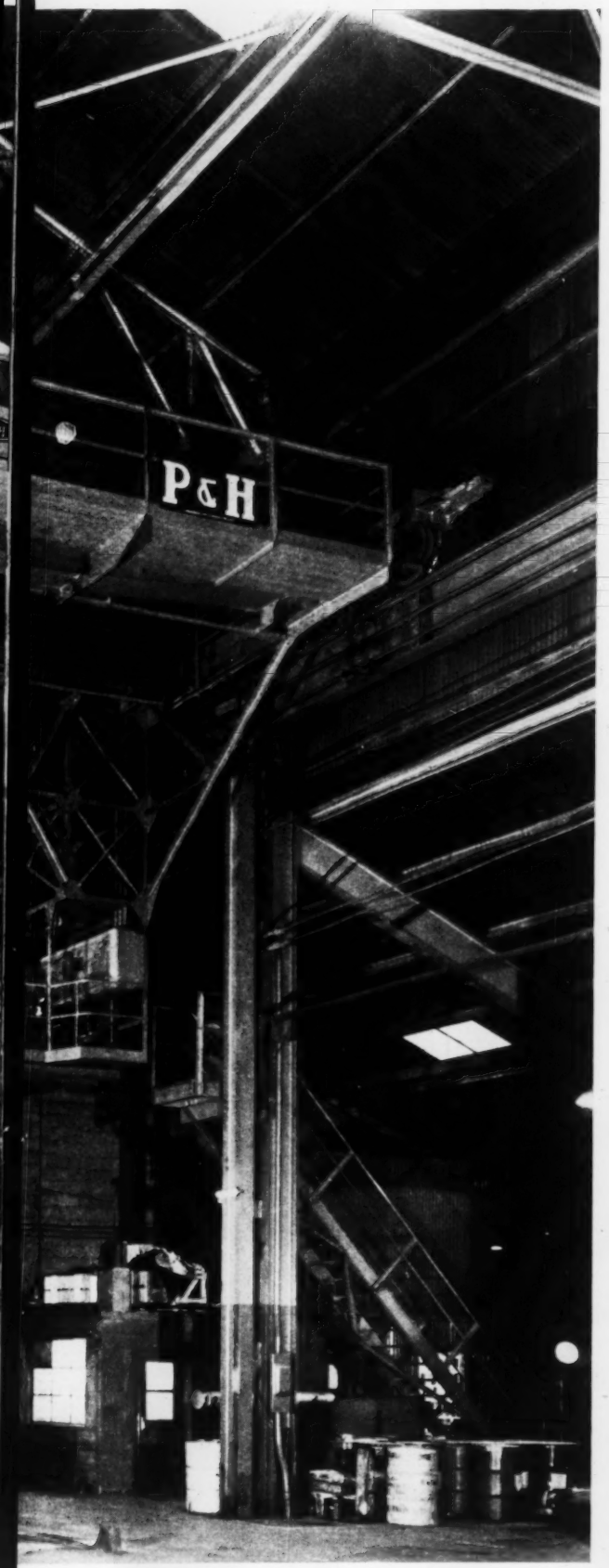
"PG" WHEELS

MINNESOTA MINING AND MANUFACTURING COMPANY

...WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

7½ TON
40 TON



Here's an AC Mill Crane doing traditional DC Crane work

It's a P&H AC mill crane, one of a growing number in steel-mill service. It moves dies to and from the press — and feeds raw stock into a giant manipulator which handles huge billets.

An important reason for the rising popularity of P&H AC mill cranes is P&H Electronic "Stepless" Crane Control. Electronically-controlled AC cranes operate at higher speeds than DC types — and can glide down to as low as 10% of full-load rated speed. This superior control of crane operations eliminates load sway and jerky "inching" — provides the right speed for lifting, moving, and positioning—and greatly reduces crane maintenance and parts inventory.

Check the many benefits that P&H AC mill cranes with P&H Electronic Crane Control offer you. Find out, too, how this remarkable control can update your existing AC crane—regardless of size or make — then specify it in your next crane inquiry. For information, write Dept. 129E, Harnischfeger Corp., Milwaukee 46, Wis.

HARNISCHFEGER

P&H ... quality and service for 74 years

NEW TAX CLIMATE

for your new plant

The fact that Pennsylvania manufacturers will save an estimated $45 million in taxes during the current biennium proves our point. To create this "tax climate" favorable to new and expanding industry, the state legislature has taken these steps:

1. Exempted manufacturers from capital stock and franchise tax.
2. Eliminated local *ad valorum* property taxes on machinery and equipment (there is no state-level general property tax).
3. Repealed tax on stock transfers.
4. Made 3% sales tax permanent—now the principal source of state revenues.
5. Reduced the sales tax on purchases by manufacturers.

Add the fact that Pennsylvania has no state personal income tax, and you can see how all this creates a favorable tax climate. Use the coupon below for details.

W E S T P E N N P O W E R

an operating unit of the WEST PENN ELECTRIC SYSTEM

Hello...

I'm Charlie Fife. I want to stress the point that this good tax news is only one of many facets that interest manufacturers in expansion in WESTern PENNsylvania.

For example, we have communities offering **100% financing** in attractive lease/purchase agreements; interest as low as 2%, with deferred amortization, can be applied on up to 50% of total plant cost.

Skill surveys and labor inventories in our files show the true picture of **labor availability,** both male and female.

We'll gladly assign a **plant location specialist** to personally assist in your evaluation of WESTern PENNsylvania. There is no charge for this professional service. And, you can be sure that West Penn Power will respect your confidence.

CHARLES M. FIFE, *Manager*
Area Development Department

WESTern PENNsylvania

WEST PENN POWER, Area Development Department, Cabin Hill, Greensburg, Pennsylvania S-1

Yes, I'm interested in WESTern PENNsylvania:

☐ Please send details on taxes. ☐ Please send booklet, "Plant Location Services."

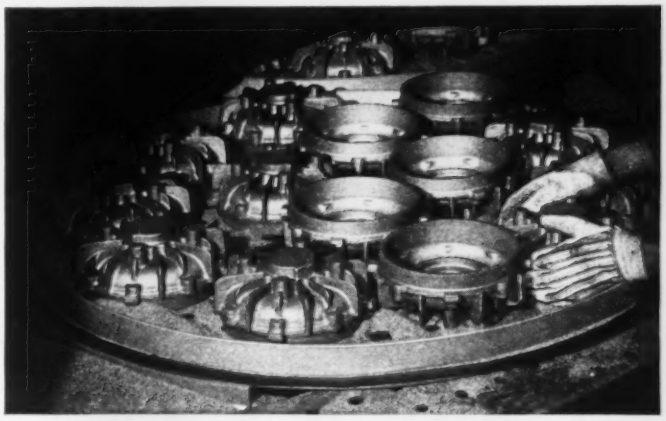
Name _____ Title _____

Company _____ Street _____

City _____ Zone _____ State _____

Cross section of motor cover casting shows how iron must fill both fins and center hub to solve heat diffusion problem.

Laytham casts complex thick-and-thin motor housings with HANNA PIG IRON



Electric motor housings today are a large volume item produced by Laytham Foundry, Inc., Paterson, New Jersey.

When the National Electrical Manufacturers Association raised its motor ratings, it presented Laytham with a challenge—and a new business opportunity. Where many former housings were made of pressed steel in welded sections, the need for greater heat diffusion would favor cast iron, providing the proper combination of thick and thin elements could be achieved.

Laytham did it. Now they regularly produce motor frame castings with a wide variation in section thickness from thin fins to heavy center hubs. Such castings require iron with a high degree of fluidity. It must also shrink evenly and be free of porosity. Hanna Malleable pig iron filled the bill perfectly.

Hanna has a grade of high-quality pig iron to meet your requirements, too. All regular grades, plus HannaTite and Hanna Silvery, are available in 38-pound pigs and the smaller HannaTen ingots. For pig iron that will help solve your metallurgical problems, call on one of Hanna's trained representatives.

THE HANNA FURNACE CORPORATION
Buffalo • Detroit • New York • Philadelphia
Merchant Pig Iron Division of
NATIONAL STEEL CORPORATION

the beverage bar with a "brain"... of Stainless Steel

The "brain" in this coin-operated soda dispenser is a valve that works round the clock to see that you get soda . . . or your money back.

It's an ingenious unit that automatically shuts off if the system fails — or the tank is emptied. Then too, it provides a device that bleeds air after each refill . . . and a precise mechanism that equalizes pressure to assure a uniform drink. Sanitary and corrosion-proof, all its working parts are made of stainless steels — not just one steel, but *four*.

The plunger and stop are Type 430F bar (magnetic) . . . the spring is 302 wire (non-magnetic) . . . the probe is 303 bar (machinability) . . . and the cylinder is 304 *welded* tube (economy). Despite this mixed requirement, *all* 4 grades are supplied *overnight* by Frasse.

You'll find it simpler, when working with stainless steels, to work from Frasse warehouse stocks. The wide range of sizes, shapes and analyses, so quickly available from this single source, is a time and effort saving convenience. For stainless steels . . . *always* call Frasse *first*.

Call FRASSE 1st for

COMPLETE STAINLESS STEEL SERVICE

Bars	**Wire**
Forgings	**Tubing**
Sheets	**Pipe**
Strip	**Fittings**
Plates	**Valves**

AMERICAN STEEL WAREHOUSE ASS'N

YOUR STEEL SERVICE CENTER

Peter A. Frasse & Co., Inc.

NEW YORK 13, N. Y. 17 Grand St. WAlker 5-2200
PHILADELPHIA 29, PA. 3911 Wissahickon Ave. BAldwin 9-9900
BUFFALO 7, N. Y. P. O. Box K, Sta. B BEdford 4700
SYRACUSE 1, N. Y. P. O. Box 1267 HOward 3-8655
HARTFORD 1, CONN. P. O. Box 1949 JAckson 9-6861

LYNDHURST, N. J. • ROCHESTER, N. Y.

Want to cut costs on parts like these?

Here's how tracing will help you save

The simple, basic setup shown above handles nearly 300 different parts for a well-known manufacturer of drive line components. All work is performed on one Gisholt MASTERLINE No. 4 Ram Type Turret Lathe with a JETracer on the rear of the cross slide. Standard tools on the hex and square turrets are used to face, chamfer and reduce the stock while the JETracer finishes all diameters, steps, blends and radii. The $6\frac{9}{16}$"-long, 2"-diameter stepped shaft (above at left) is typical and is completed in two operations with total f.t.f. time only 4.95 minutes.

Here are just a few things the JETracer can do for you:

- Shorten setup and change-over time
- Simplify machining and eliminate operator errors
- Save cost of form tools, multiple tool blocks and holders
- Reduce inspection time (only one length and one diameter need checking)
- Minimize or eliminate secondary operations (through finer finish, greater accuracy)
- Increase production through automatic machining of complex surfaces
- Free operator to handle extra units or perform other work

Gisholt has developed a complete line of JETracers for use with ram and saddle type turret lathes, automatic turret lathes and single-spindle chucking lathes. These include rear cross slide, turret and independent slide mounted units, single or multi-pass types. *All are designed to operate at full capacity of the machines to which they are applied, without limiting machine functions or restricting the use of standard tools.*

You'll want to see for yourself how the JETracer adds flexibility, speeds operations and cuts costs on standard and problem parts. Send the coupon today for your free copy of the new JETracer catalog, or call your Gisholt Representative for complete information.

GISHOLT MACHINE COMPANY

Madison 10, Wisconsin

ASK YOUR GISHOLT REPRESENTATIVE ABOUT FACTORY-REBUILT MACHINES WITH NEW-MACHINE GUARANTEE

Gisholt Machine Company
1217 E. Washington Ave.
Madison 10, Wisconsin
Please send a copy of the new Gisholt JETracer catalog.

Name ..... *Title* .....

Company .....

Street address .....

City ..... *Zone* ..... *State* .....

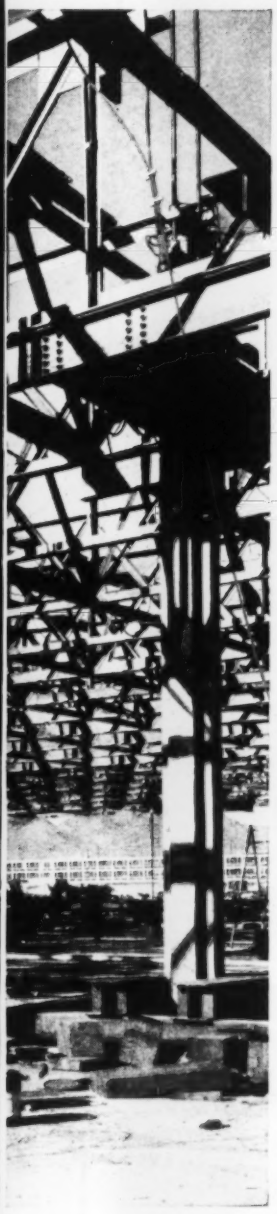
When you buy from U. S. Steel

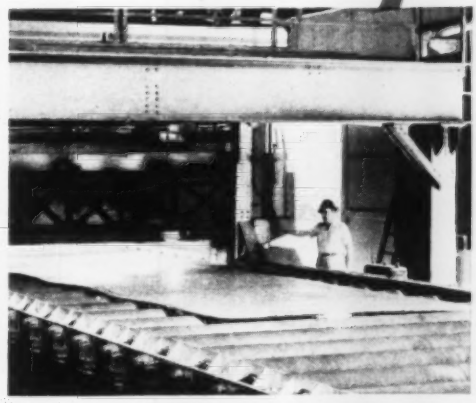
STEEL + PLUS IN ACTION: TECHNICAL ASSISTANCE

American Bridge Division of U. S. Steel fabricated and erected this steel truss roof for the Air Force Academy dining hall, *before* the walls were in. And what a roof! It's as big as two football fields and it weighs 1150 tons. Our construction crew welded the trusses together on the ground, set 16 columns in place, then jacked the roof up 24 feet to the top of the columns.

American Bridge • American Steel & Wire and Cyclone Fence • Columbia-Geneva Steel • Consolidated Western Steel • National Tube • Oil Well Supply
Tennessee Coal & Iron • United States Steel Homes • United States Steel Products • United States Steel Supply and Gerrard Steel Strapping
Universal Atlas Cement • United States Steel Export Company

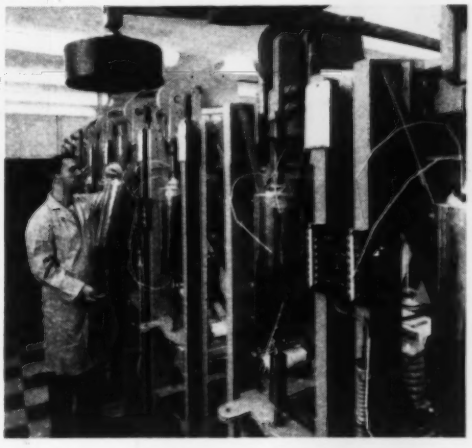
you get STEEL + PLUS





STEEL + PLUS IN ACTION: FACILITIES

To supply customers with the specialty products required for today's—and tomorrow's—critical applications, U. S. Steel equipped its Homestead Works with new facilities to heat-treat large plates of Stainless and USS "T-1"* Constructional Alloy Steel. These facilities have resulted in products having higher, more uniform mechanical properties and improved flatness, and have made them available in quantities to meet our customers' growing requirements for these special steels.



STEEL + PLUS IN ACTION: RESEARCH

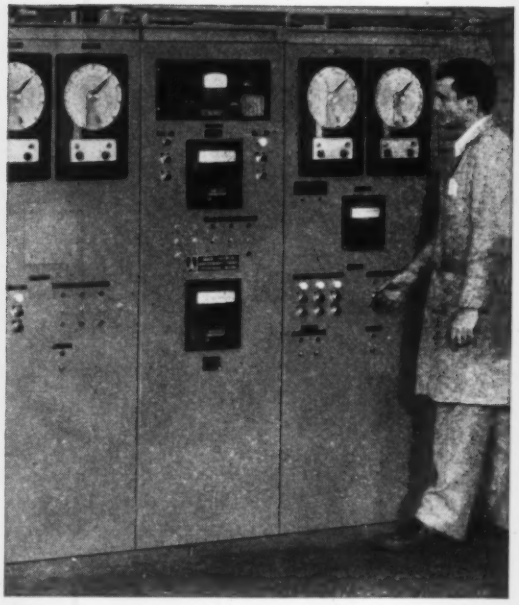
U. S. Steel research teams conduct "creep" and "rupture" tests to determine how long it takes metal, at very high temperatures, to distort and break under a load. This type of information is vital, not only to develop better grades of steel, but to help designers select the best materials for equipment that has to function under extreme heat.

STEEL + PLUS IN ACTION: MARKETING ASSISTANCE

The tremendous selling power of national television promotes the products made by U. S. Steel customers. Here, during a "Steel Hour" commercial, Sheila Jackson and Jack Brand tell thousands of farm owners about the advantages of factory-built steel buildings for the farm. Result: more customers for our customers.

USS *TRADEMARK

United States Steel



Bridgeport Brass chooses
SPEEDOMAX® H CONTROL
for vacuum annealing Ti, Zr
and special alloys

Bridgeport, Conn.—Vacuum anneal . . . cool . . . then draw! Again and again . . . until the seamless tube of titanium, zirconium or special alloys takes final dimensions.

That's the procedure at Bridgeport Brass Company's Housatonic Plant where reliable Speedomax H temperature control is helping them produce tube after tube of the same high quality.

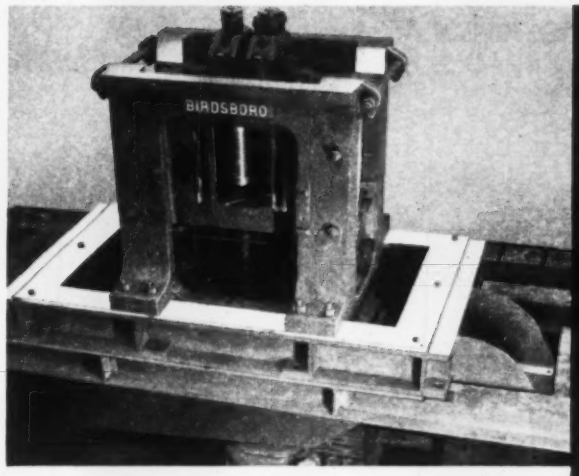
Quantity production of these tubes requires close control of all variables, particularly atmosphere and temperature.

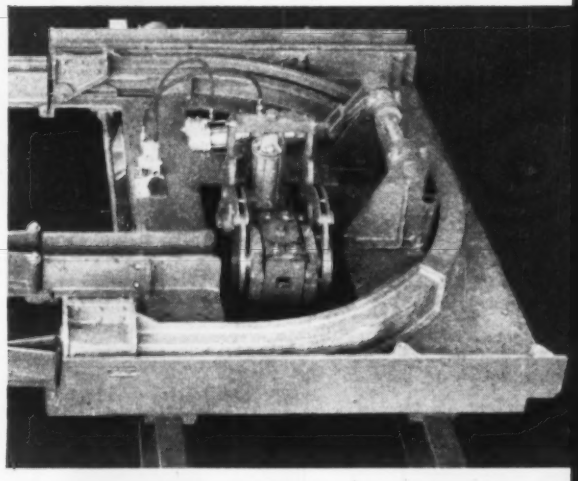
To minimize loss of the expensive "new" metals and to maintain chemical and physical characteristics, Bridgeport Brass Co. installed a HIVAC vacuum annealing furnace with a Westinghouse heating chamber over a year ago. With evacuation held to 0.01 micron, four Speedomax H instruments provide D.A.T. control . . . constantly regulate power input to hold product temperature well within specifications. Such dependable automatic control is resulting in production savings which make the use of these new metals more economical.

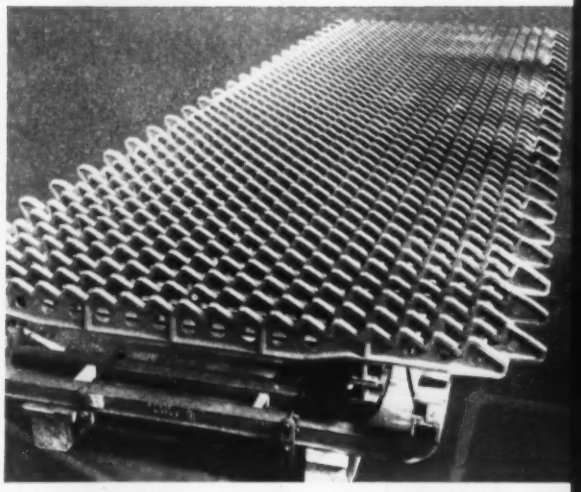
You may not be vacuum annealing . . . but no matter what your heat treat, it'll pay you to investigate Speedomax H. Its workhorse characteristics . . . its two to four week delivery . . . and its moderate price now, more than ever before, make this null-balance controller an attractive investment.

A phone call or letter to your nearest L&N office or to 4957 Stenton Ave., Phila. 44, Pa. will bring more information. Ask for data sheets.

LEEDS NORTHRUP
Instruments Automatic Controls • Furnaces







there's a spot in your rolling mill layout where creative engineering ***can cut costs***

• This cost-cutting creativity is an integral part of Birdsboro engineering service. Only by increasing productivity *economically* will you be able to operate profitably in the future. New developments in automated and semi-automated mill machinery can key up your entire mill to new profit levels.

For complete information on a single unit or an entire mill, contact your Birdsboro representative. *Main Office, Engineering Department and Plant:* Birdsboro, Pa., *District Office:* Pittsburgh, Pa.

MM-68-58

BIRDSBORO

STEEL FOUNDRY AND MACHINE CO.

STEEL MILL MACHINERY • HYDRAULIC PRESSES • CRUSHING MACHINERY • SPECIAL MACHINERY • STEEL CASTINGS • Weldments "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel

Another fine product gains NEW S.A. By Switching to the Saginaw Screw*

FRANK S. BUCKINGHAM
Chief Engineer, Static Testing Machines, Baldwin-Lima-Hamilton Corp., reports:
"Using a Saginaw Screw on this tester reduced required horsepower from 15 to 5."

WORLD'S MOST EFFICIENT ACTUATOR OPERATES 75-TON BALDWIN TESTER WITH 5 H.P. INSTEAD OF 15

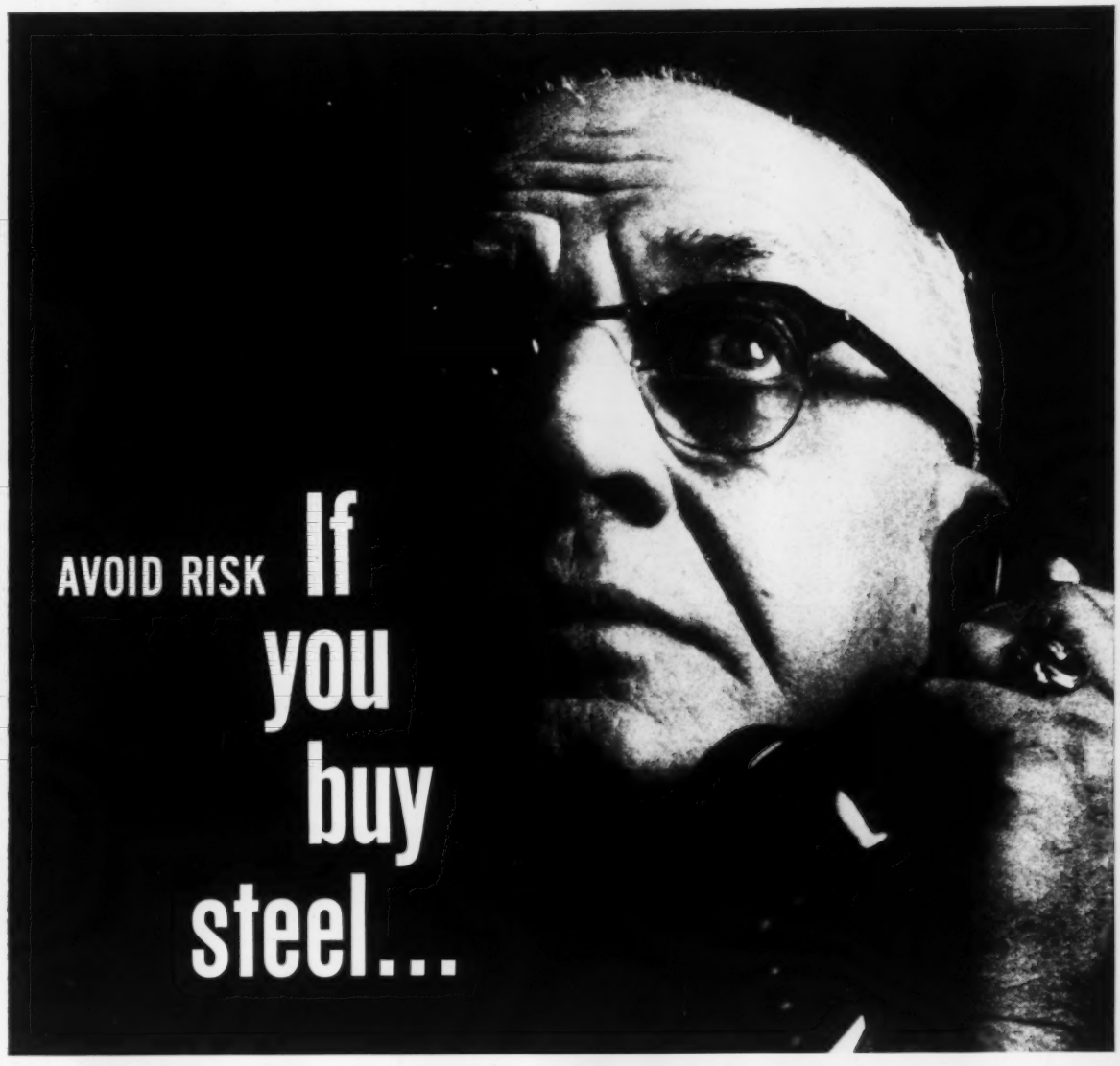
When you can cut power requirements 66% you give your product a lot more ***S**ales **A**ppeal—and that's just what Baldwin-Lima-Hamilton has done by switching from an acme thread to a preloaded Saginaw b/b Screw. What's more, it speeds up cycling and ends fretting corrosion, too.

The truly amazing ability of the Saginaw Screw to convert rotary motion to linear motion with over 90% efficiency is saving power, space, weight and assuring smoother, more dependable performance in countless products from miniature electronic controls to giant production equipment.

Perhaps the Saginaw Screw can give your products that vital new **S**ales **A**ppeal you're looking for right now. To find out, write or telephone Saginaw Steering Gear Division, General Motors Corporation, Saginaw, Michigan—*world's largest producers of b/b screws and splines.*

**Give your products NEW SALES APPEAL... switch to the*

Saginaw ball bearing Screw



USE OUR SERVICE to maintain production continuity...

. . . *without fear of stock obsolescence.* Your steel is quickly available from our large inventories, deliveries scheduled in advance of production needs. You get your steel when you want it, delivered, cut to exact size and ready for production. And, your losses brought on by obsolescence or mistakes in forecasting are reduced. We assume these risks for you. That's good business.

You also tie up less capital in inventory. You save costs of space. Your equipment costs for storing, handling, cutting are reduced. You keep your insurance, taxes and interest costs to a minimum.

Use this chart to compare *all* of your *costs of possession* with the cost and *freedom-from-risk* of buying steel from your Steel Service Center. Or, get the booklet *What's Your Real Cost of Possession for Steel* from your nearby Steel Service Center. American Steel Warehouse Association, Inc., 540 Terminal Tower, Cleveland 13, Ohio.

COST OF POSSESSION FOR STEEL IN YOUR INVENTORY

Per ton delivered	
Cost of capital:	
Inventory	
Space	
Equipment	
Cost of operation:	
Space	
Materials handling	
Cutting & burning	
Scrap & wastage	
Obsolescence	
Insurance	
Taxes	
TOTAL	

COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

Per ton, cut-to-size, and delivered	
TOTAL	

AMERICAN STEEL WAREHOUSE ASS'N

The American Steel Warehouse

. . . YOUR STEEL SERVICE CENTER

How to cut costs with the RIGHT motor

Don't be baffled by power factors, torques, efficiencies, and starting, accelerating, and thermal characteristics, or housing, horsepower and speed control. Let Century Electric help you balance these factors to cut operating costs with the *right* motor.

Here's how Century Electric can help you:

10,000 choices—Century Electric engineers can help you specify the right motor without having to rely on a few types to do all jobs. Century Electric makes a complete variety of integral horsepower motors. Over 10,000 types up to 400 hp. There is one for every type of equipment—transfer machines, ball mill drives, compressors, drilling machines, lathes, etc. For all operating conditions too—dusty, corrosive, explosive or moist.

Long life motors—And you get years of dependable operation from Century Electric motors. They are manufactured to rigid quality standards. Electrical tests and other checks on operating characteristics made during manufacture assure you the best motor for your money.

Application know-how—Every Century Electric sales engineer knows motor drive systems because he sells motors and nothing but motors. Often he can give you on-the-spot answers. If not, he can turn to an engineering staff that comes up with quick answers.

You can get the right motor for your equipment just by contacting your nearest Century Electric Sales Office or Authorized Distributor. A Century Electric sales engineer will be glad to help you.

CENTURY ELECTRIC COMPANY

St. Louis 3, Missouri *Offices and Stock Points in Principal Cities*

Century

58-22

THE "BUFFALO" UNIVERSAL IRON WORKER

NOTCHES
PUNCHES
SHEARS
MITERS
SLITS CUTS COPES

takes the space of one machine, does the work of six — FAST!

The compact, multi-purpose "Buffalo" Universal Iron Worker saves space, time and work. It occupies the space of only *one* machine, yet performs up to *six* operations. The UIW will handle up to three jobs *at once*, thus saving much labor and time in conveying work.

The versatile "Buffalo" Universal Iron Worker is available in several models for cutting, punching, notching, shearing, slitting, coping, mitering — without changing tools. It quickly and easily handles angles, tees, channels, bars and flats.

The heavy electrically-welded steel plate frame, rugged construction throughout and one-shot lubrication system insure a long life of efficient, dependable service. Easy to set-up, easy to operate, the "Buffalo" Universal Iron Worker will speed up production and maintenance in your shop as it has in hundreds of others.

Contact your "Buffalo" machine tool dealer for a demonstration of the UIW — see how it can streamline *your* shop operations. Or, write for Bulletin 360-G for full details.

Every "Buffalo" product brings you the extra "Q" Factor value-bonus — the built-in QUALITY that provides trouble-free satisfaction and long life.

ESTABLISHED 1877 "Buffalo" MEMBER N.M.T.B.A.

BUFFALO FORGE COMPANY
158 MORTIMER STREET • BUFFALO, N. Y.
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING
PUNCHING
SHEARING
BENDING

Strong Restraining Influences...

Roebling Hose Reinforcing Wire

Roebling Hose Wire, Hose Reinforcing Wire and Hose Wrapping Wire bear the stamp of Roebling's strict attention to constant uniformity. As with all Roebling wire products, each is wholly Roebling-made and Roebling-controlled, from open hearth to packaging. Tensile strength and forming qualities, finish and gage are of an excellence that proves itself in use.

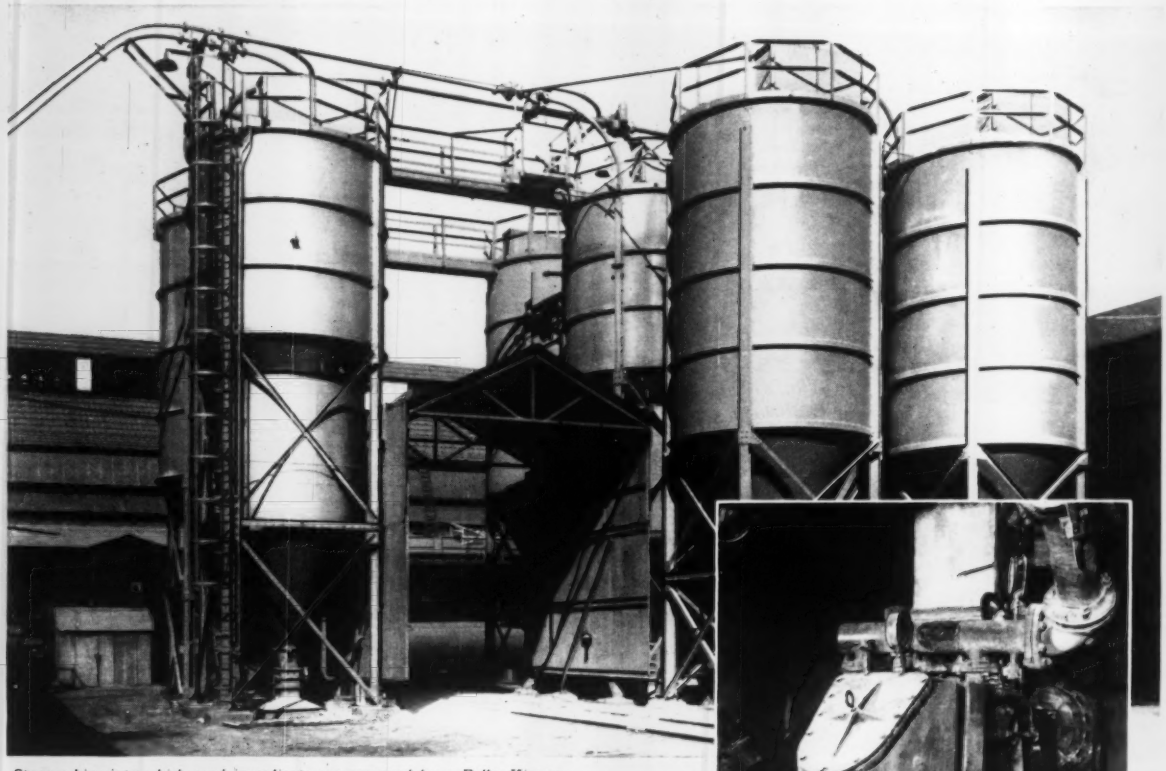
Resistance to internal and external pressures and wear are what you look for in hose wires and what you pay for. With Roebling, you *get* them.

For further information on these and other Roebling quality products, write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

Roebling...Your Product is Better for it

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation



Storage bins into which sand ingredients are conveyed by a Fuller-Kinyon Conveying System. Note the pipe-line system which permits ingredients to be conveyed into their respective bins.

One of two Fuller-Kinyon Pumps which convey sand ingredients to storage bins and from bins to mixers.

FULLER-KINYON CONVEYING SYSTEM HANDLES THREE DIFFERENT MATERIALS EFFICIENTLY, WITHOUT WASTE

To reduce costs and speed up handling of foundry sand ingredients with minimum waste, General Steel Castings Corporation, Granite City, Illinois, installed a Fuller-Kinyon Conveying System.

Here's what it does for them—

The system unloads corn flour, silica flour and bentonite from hopper bottom cars by means of Fuller-Kinyon Pumps which convey these materials through pipe lines to a number of storage bins. The flexibility of the system makes it possible to unload cars in a fraction of the time that would be required manually, *and*, waste due to spillage is eliminated. Two pumps used in the operation can be moved on narrow gage tracks for spotting under cars or bins. One pump is used mainly for unloading and delivery to storage—the other for delivery from storage to supply bins above the mixers. However, it is possible to unload cars and reclaim from storage simultaneously. Where bins are located so that they cannot discharge directly to a pump, an F-H Airslide® conveys from bins to the pump.

Prior to the Fuller installation, material was received in bags and manually unloaded, stored and transported to the mixers. It figures—*costs were much higher*. Now, waste has been eliminated! Another important feature—the company has realized extra savings by purchasing materials in bulk.

Fuller air-conveying systems are in operation in hundreds of plants throughout industry, cutting costs and increasing profits, day in and day out. The next time you have a materials-handling problem, why not get in touch with Fuller . . . chances are you will also profit.

FULLER COMPANY GENERAL AMERICAN TRADE MARK

Fuller

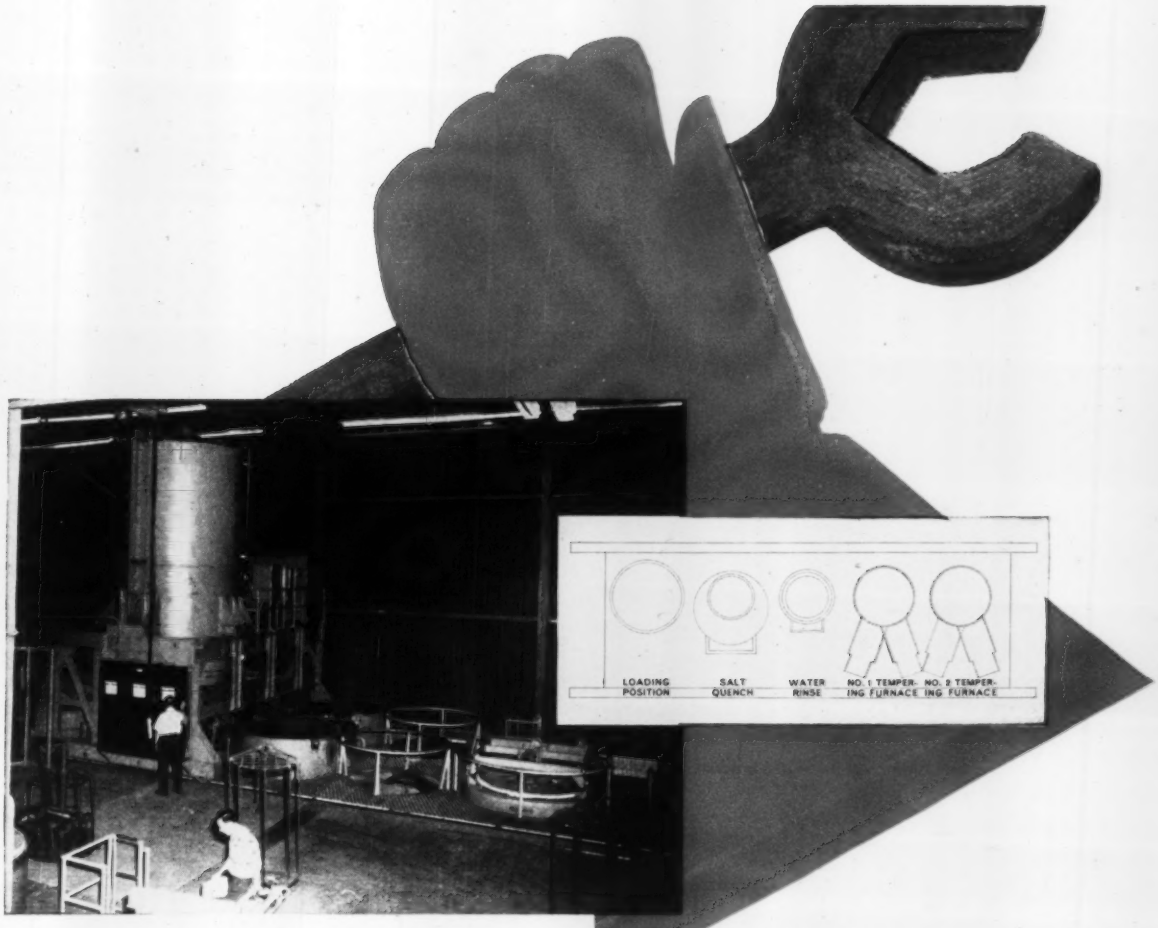
. . . . pioneers in harnessing AIR

FULLER COMPANY

160 Bridge St., Catasauqua, Pa.

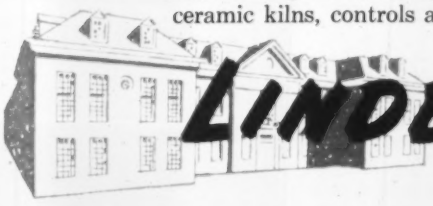
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION

Birmingham · Chicago · Kansas City · Los Angeles · San Francisco · Seattle

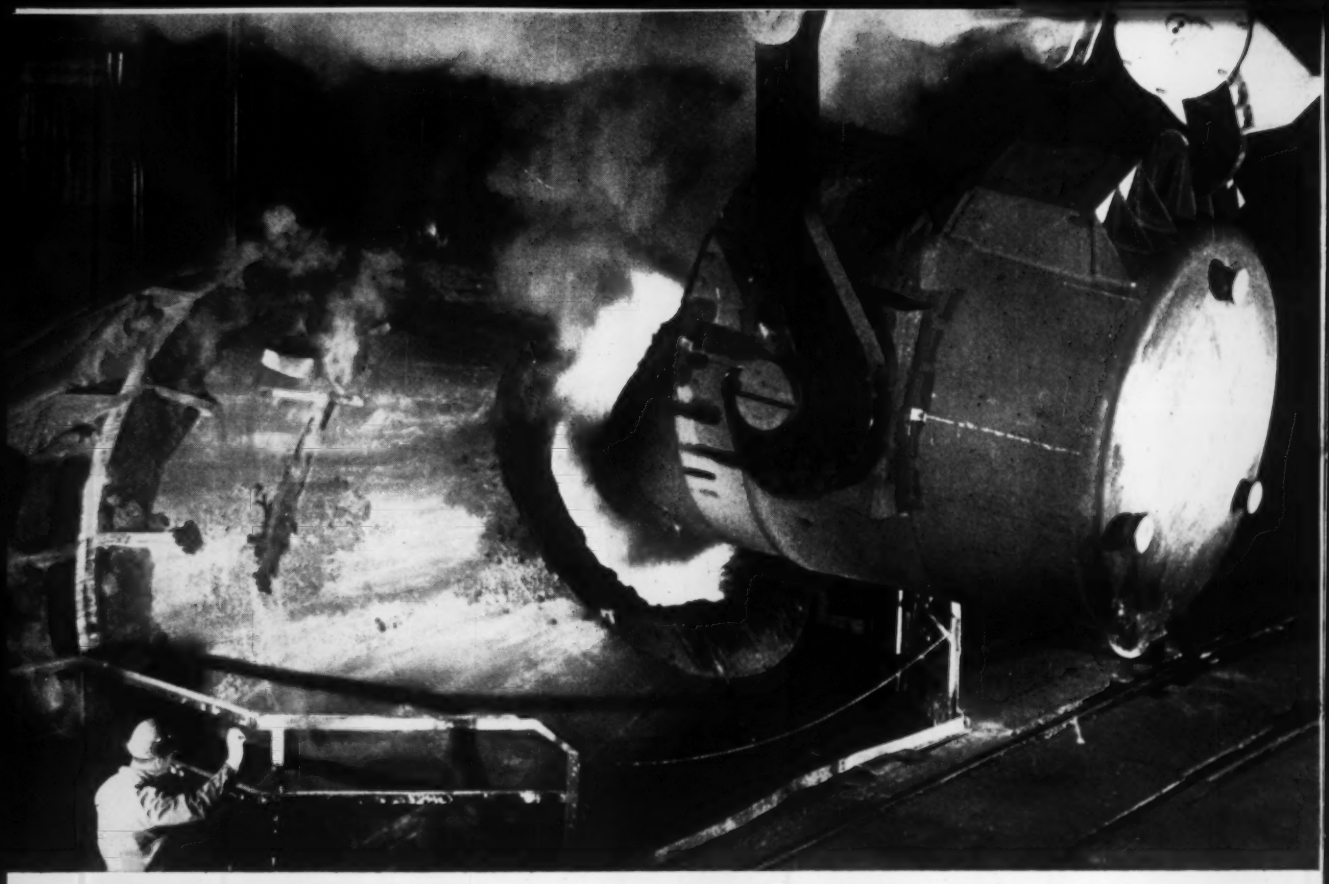


Lindberg applies the creative touch to field-installation

Here is an example of Lindberg's creative touch in field-installed heat treating equipment. Our unique design of this movable overhead furnace saved space, labor and time and increased quality and operating efficiency in missile manufacturing. We have the technical staff and the experienced engineers to design and install for you any requirement you may have for the application of heat to industry. Our service covers all types of heat treating furnaces, aluminum melting and holding furnaces, high frequency units, ceramic kilns, controls and all facilities required to fit this equipment into your production processes. We specialize in "turn-key" operations covering everything from design and engineering to the finished job installed in your own plant. Whatever your industrial heating problem, a good way to solve it is to talk it over with Lindberg. Just get in touch with your local Lindberg Field Representative (See classified phone book) or write Lindberg Industrial Corporation, 2321 West Hubbard St., Chicago 12, Illinois. Los Angeles Plant: 11937 S. Regentview Avenue, at Downey, California.

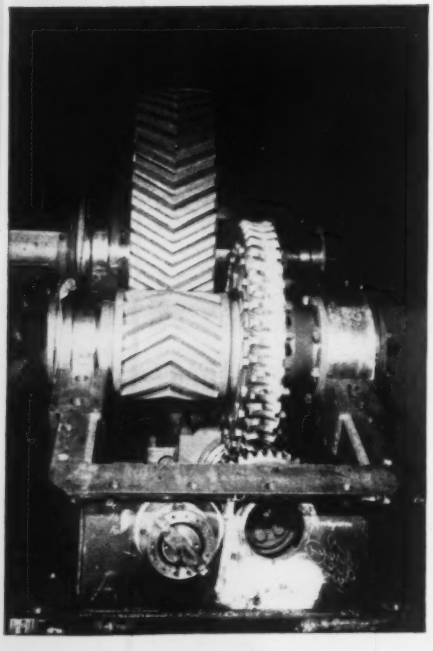


LINDBERG heat for industry



Largest basic oxygen furnace in the world produces steel by receiving a jet of pure oxygen. Gears (below) are Texaco-lubricated.

Texaco lubricates the gears that tilt America's largest basic oxygen furnace



When a gear train has to tilt a furnace that weighs 340 tons including 90 tons of molten iron and scrap in a 180-degree arc every half hour, you've got a tough lubrication problem—and Jones & Laughlin solved it with *Texaco Meropa Lubricant.*

The basic oxygen furnace at J&L's Aliquippa (Pa.) Works is the largest in the U.S. Its reduction gears are lubricated with *Meropa* because this heavy-duty lubricant resists shock and heavy loading, and stands up under high temperature. J&L's experience with *Meropa* in other applications had previously proved its high resistance to corrosion, oxidation, foaming and sludging—in addition to stable viscosity for easy pumping and dependable extreme pressure characteristics.

There is a full line of *Texaco Meropa Lubricants* designed specifically to meet all requirements of steel mill gear drives. A Texaco Lubrication Engineer will gladly suggest the right one for your application. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company,
135 East 42nd Street,
New York 17, N. Y.

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

STEEL

August 4, 1958

Metalworking Outlook

Armco Breaks Steel Price Line

Armco Steel Corp. was the first major steel producer to boost prices last week (Alan Wood Steel Co. tried earlier but rescinded action when no one else followed). U. S. Steel Corp. said it was "studying the situation." But indications were that several other major steel firms would follow Armco's action. Boosts average 2¾ per cent on hot and cold rolled carbon steel sheet and strip. Boosts ranged from $3 to $7 a ton.

Armco's New Prices

Here are Armco's changes (effective July 31) for principal products: hot-rolled sheets—$102.00 per ton, up $3.50; cold-rolled sheets—$125.50, up $4.50; enameling sheets—$135.50, up $3; galvanized sheets—$137.50, up $5.50; long-terne sheets—$144.50, up $4.50; hot-rolled carbon strip—$102.00, up $3.50; aluminized sheets (type 1)—$190.50, up $5.50; aluminized sheets (type 2)—$192.50, up $5.50.

Common Ground for Auto Pact?

Pensions and SUB will probably be the points on which the auto companies and the United Auto Workers can finally get together on a contract. More than 90,000 UAW members have received pension benefits so far, and retirements are running at a rate of almost 1000 a month. GM, Ford, and Chrysler stopped contributing 5 cents per man per hour to SUB funds on June 1 because they had reached maximum funding positions required by their contracts. That will be a nest egg the companies can play with if they want to fatten SUB. The Big Three have saved $8 million in cost-of-living and annual improvement raises that haven't been paid since contracts expired two months ago.

GE Starts To Bargain Sept. 2

General Electric Co. and the International Union of Electrical Workers start negotiating Sept. 2 on nonwage matters. Significance: GE, considered by many experts as one of the most successful negotiators on the management side, warns that it will take a strike rather than yield to IUE demands for a guaranteed annual wage. This will be the third time the union has asked for a layoff pay plan. It wants a guaranteed annual wage equal to 80 per cent of takehome pay or 65 per cent of gross pay, whichever is larger. The GE-IUE contract is a five-year pact with two years to run. An automatic wage increase of at least 5 cents will go into effect this fall.

Rail Prospects Brighten

After ironing out differences in conference, both houses of Congress last week were expected to pass legislation aiding the nation's railroads. The new law

(STEEL, June 23, p. 47) offers up to $500 million in federally guaranteed loans for capital equipment and maintenance; allows rails to ask the ICC, rather than state agencies, for the right to stop unprofitable passenger service; sets up new lines for the ICC to follow in rate cases; and tightens rules regulating rail competitors.

Detroit Saves Money on Equipment

Machine tool builders are watching their best customer, the automotive industry, turn to its vast supply of used machines for more of its equipment needs. The line for Chevrolet's engine incorporates a host of rebuilt and retooled equipment, only a handful of new machines. Ford's 6-cylinder engine block will be turned out on a transfer line adapted from a V-8 line at the company's Lima, Ohio, plant. GM has a long list of "surplus" machines that could be converted to new jobs. And watch for intraindustry shopping — De Soto reportedly sold some machines to Chevrolet. That all means builders will be doing more rebuilding and retooling—and competing with many tool and die shops and other job shops for the business.

Electronic Refrigeration Coming?

When a current is passed through the junction of two dissimilar metals, a cooling effect occurs in the junction. When the current is reversed, the junction exhibits a heating effect. Westinghouse takes advantage of this principle, first discovered by the French in 1834, for electronic refrigeration, doing away with the size and weight of compressors, motors, and cooling coils used for conventional refrigeration. Westinghouse says it is "not necessarily planning to market products" using this principle, but it does "foresee the day, not too far in the future, when this kind of cooling will replace the conventional compressor as a coldmaker."

Space Phenomenon Aids Unusual Alloys

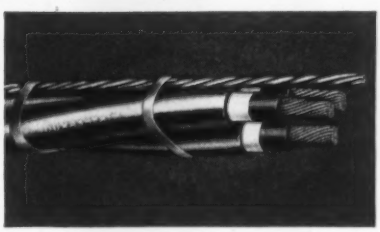
The Air Force soon may turn to a space phenomenon to solve an earthly problem. Air Research & Development Command scientists now use a technique similar to meteorite collisions in space to produce unusual metal alloy combinations. Called micrometeorite bombardment, the terrific heat and speed permit combining materials incompatible in their solid state. Aluminum and iridium can be combined in this way to produce an alloy with the characteristics of aluminum, plus the high temperature properties of iridium.

Straws in the Wind

A report by a Senate Judiciary subcommittee favors doing away with patents as a system of "a bygone era" . . . Radio Corp. of America and the Army have developed "electronic earmuffs" for combat troops. They're designed to create artificial quiet amid the roar of battle . . . Mesta Machine Co. employees have again rejected unions in a representation vote . . . U. S. Steel Corp. reiterated last week: No change in its steel prices "at this time."

IN PLANTS, where mazes of pipes and other underground installations make the placement of ducts or buried cable costly or difficult, aerial cable solves the problem.

End black-outs—with Anaconda Aerial Cable! It weathers the weather!



NEITHER wind nor ice nor fallen branches—in fact none of the hazards of stormy weather—need interrupt your flow of power. The answer: Anaconda Aerial Cable.

It is strong, sturdy . . . offers true dependability. Its outstanding storm resistance is an advantage to any plant, and to plants that *must* operate 24 hours a day, it's a necessity.

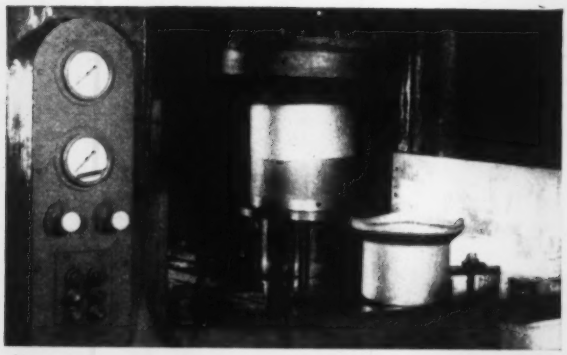
What's more, when you put this cable up, you bring overhead costs down. Installation is less because it is strung quickly, easily in the open with minimum hardware . . . maintenance problems are almost nil. And cable life is longer, thanks to a weather- and abrasion-resistant neoprene jacket. Special Type AB butyl rubber high-voltage insulation gives extra protection against ozone, heat and moisture.

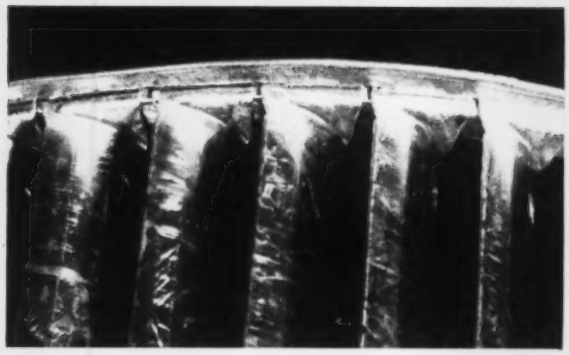
Ask the Man from Anaconda for all the facts on Anaconda Aerial Cable: both (1) factory-assembled, regular or reverse-lay for easy tapping, and (2) field-assembled types. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y. 58370

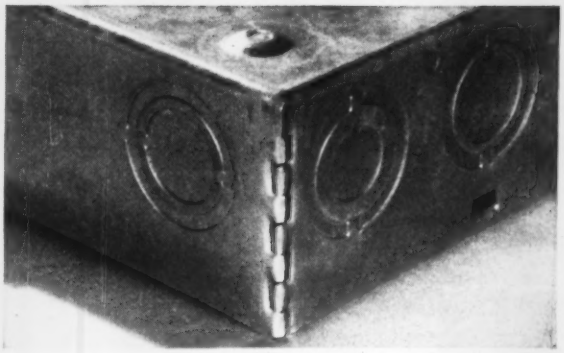
LIVE BETTER ELECTRICALLY

ASK THE MAN FROM **ANACONDA®** FOR **AERIAL CABLE**

Draw, Form, Interlock or Pierce Armco ZINCGRIP Steel– Its Special Zinc coating stays on







Workable zinc-coated Armco steel offers opportunities to cut production costs, add sales points to your products.

More than 22 years' experience in metalworking shops has proved that Armco ZINCGRIP® can be worked to the limits of the base metal without flaking or peeling of the special hot-dip zinc coating.

Cuts Production Costs

The ductile, adherent coating on ZINCGRIP means you don't have to baby it in the shop. In sheets or coils, it can be fabricated readily on modern high speed production equipment. And mill-coated ZINCGRIP often makes it possible to eliminate costly painting or plating operations on parts that must be protected from rust.

Adds Sales Points

Besides cutting costs, products made of ZINCGRIP have a smooth, attractive appearance that gives them sales appeal and economical corrosion resistance that keeps customers satisfied.

Let us send you more information on how the multiple advantages of Armco ZINCGRIP Steel can help you give your products an edge on competition. Just fill out and mail the coupon.

ARMCO STEEL CORPORATION. 2348 Curtis St., Middletown, Ohio

Send me information on Armco ZINCGRIP Steel We manufacture

New steels are born at Armco

NAME

COMPANY

STREET

CITY ZONE STATE

ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Depreciation Reform:

Weapon Against Soviets

One of the most pressing needs of our day is a more sensible tax depreciation policy on plant and equipment.

Industry has been forced to operate under outmoded tax laws dating back to the early 1930s. At the time, the government found it could increase taxable corporation income by stretching the writeoff period over 20 to 25 years.

In 1942, the U.S. Treasury's Internal Revenue Service revamped its list of depreciation allowances (Bulletin F), but the useful life of machine tools was left at about 20 years. In 1954, the Internal Revenue Act was modified to provide two options for computing depreciation: The double declining balance method and the sum of the digits method.

Some relief has resulted, but, by and large, the expedient of the thirties is still with us.

The system needs changing if for no other reason than this one cited by the Machinery & Allied Products Institute in its new study on depreciation:

"We are in deadly competition, militarily and economically, with a country that has sustained in recent years, and seems likely to sustain for some time ahead, a growth rate approximately twice our own.

"If the Soviet Union can manage to outpace us so dramatically for another decade, it will be hard to convince even our friends that the communist economic system is not the wave of the future.

"If we hope to step up our rate of progress to something near the Soviet tempo, we are going to have to provide both the financial wherewithal and the incentive for a higher rate of productive investment."

The MAPI study offers alternative proposals:

1. The use of the declining balance writeoff at three times the straight line rate.

2. The use of special initial writeoffs (25 per cent on equipment and 12.5 per cent for plant) along with the double-rate declining writeoff.

MAPI's proposals are among a dozen presented in Washington. One, described by this magazine, is the bracket system. It classifies capital equipment into groups, eliminating Bulletin F.

The multiplicity of proposals no doubt has contributed to the confusion over what should be done and may be delaying action in Congress. But complexity and the difficulty of coming up with a piece of legislation that will please a lot of people do not excuse inaction on such a vital issue.

We've got to start someplace—now.

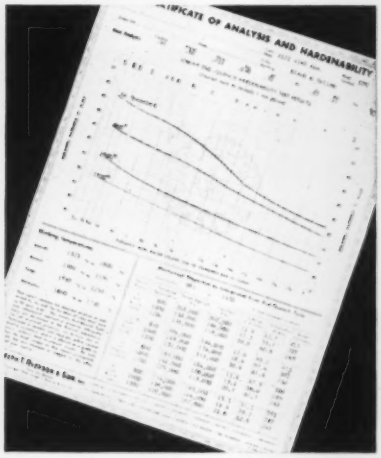
Any action must be initiated by the House Ways & Means Committee. You can help by voicing your opinions to its chairman, Rep. Wilbur D. Mills, Washington 25, D. C.

Irwin H. Such

EDITOR-IN-CHIEF

Spark testing by skilled Ryerson inspectors protects against possibility of mixed steels.

Every bar is identified by its own particular heat symbol and color marking, to indicate type of alloy.



With every shipment you receive a Certificate of Analysis and Hardenability—your complete record of the steel's characteristics, and your guide to dependable heat treatment.

How Ryerson takes the risk out of your alloy steel

Alloys from different heats can vary widely in hardenability—and as a result, vary just as widely in mechanical properties.

This puts a big question mark on how your steel will perform. Moreover, you may not know you have a problem until it's too late.

The big difference with Ryerson is—you know what to count on before you start. Every bar of Ryerson alloy steel is protected by an 8-Point Quality Control Program—including identification by specific heat as well as by type; spark testing to avoid mixed steels; and complete hardenability tests in accordance with A.S.T.M. specs. This enables us to send you a report on every shipment of alloy steel . . . a report telling you what your steel will do, and how to heat-treat to obtain desired properties.

These are the plus benefits you get at no extra cost when you order alloy steel from Ryerson. Call your nearby Ryerson plant today. . . . or ask your Ryerson representative to explain our certified plan.

RYERSON CERTIFIED QUALITY

RYERSON STEEL

Member of the INLAND Steel Family

Principal products: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing—aluminum, industrial plastics, metalworking machinery, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI • CLEVELAND DETROIT • PITTSBURGH • BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

Earnings Outlook for Second Half:

A so-so third quarter because of:	A fourth quarter rebound due to:
Sluggish demand.	An uptrend in demand.
Mounting labor costs.	Better inventory balance.
High material costs.	Pickup in auto production.
Price competition.	Firmer prices.
Some inventory liquidation.	Improved consumer spending.
Record R&D spending.	Higher government expenditures.
Vacations.	Effect of cost reduction programs.

Profit Uptrend Ahead

It won't gather much steam in the third quarter, but it will be sloping steadily upward in the fourth. Many industries note slight pickups in demand as profit decline eases

A SLOW and somewhat shaky uptrend in metalworking profits is beginning. While the third quarter will probably pretty much parallel the second, the fourth quarter should show significant, though sluggish, improvement.

The second quarter's listings closely approximated those posted in the first period for a majority of companies. Some suffered further setbacks. But a goodly number showed higher net profits, indicating the worst of the recession is past.

Four out of five steelmakers reported improvement in the second period over the first three months. Some registered sizable boosts: Inland Steel Co. and Republic Steel Corp. both posted gains of more than 50 per cent. Detroit Steel Corp. showed a slight second quarter profit after a $303,678 first period loss. Jones & Laughlin Steel Corp.'s earnings rose 143 per cent.

With orders holding up better than expected, some steelmakers look for third quarter improvement—despite higher labor costs and plant shutdowns for vacations.

Far Below '57—Even with the expected improvement, metalworking can't hope to approach the 1957 profit level this year. Many companies will have difficulty clearing half what they earned last year.

Only a handful of firms, such as International Business Machines Corp., will set earning records. For some metalworkers, the second half goal is the minimization of losses.

Potential Barriers—The effect of improved demand on profits will be more than a directly proportional gain. That's because increased buying will tend to firm prices. (Much of the poor first half showing can be attributed to price weakness.) So second half gains in profits are in prospect.

But two factors—a steel price increase and an auto strike—could bring about a further slide.

Steelmakers say they'll have to boost prices to show respectable last half earnings; steel buyers fear the added costs would further erode their margins since much of the boost would be absorbed.

An extended auto strike could reverse the fourth quarter outlook. A prime upward factor: Anticipated high production in Detroit after new model introductions.

Steelmakers are pinning their third quarter hopes largely on the auto market. Carmakers have begun volume buying for '59 models, and prospects of a steady rise in demand from that source figure largely in mill projections of higher operating rates during August and September. July may have been the steel industry's third best month of the year, because of demand from Detroit.

Aircraft Outlook Mixed—Several aircraft producers expect to exceed their '57 profit showings this year. Chance Vought Aircraft Inc.'s mid-year backlog was $542 million, vs. $467 million a year ago. Bell Aircraft Corp.'s president, Leston Faneuf, predicts this year's profit

Metalworking's First Half Earnings Hit Bottom

(Net profit)

SELECTED COMPANIES	1958	1957
Air Reduction Co. Inc.	$6,556,383	$8,219,051
Allis-Chalmers Mfg. Co.	8,611,204	11,292,018
Aluminum Co. of America	19,471,908	38,038,979
American Brake Shoe Co.	2,525,249	5,426,912
American Zinc, Lead & Smelting Co.	471,328	900,043
ASR Products Inc.	574,171	753,029
Avco Mfg. Corp.	6,210,485	5,232,621
Bell Aircraft Corp.	2,175,703	2,121,645
Bell & Howell Co.	634,774	454,733
Bliss & Laughlin Inc.	470,497	1,221,174
Bohn Aluminum & Brass Corp.	296,246	687,741
Budd Co.	700,376	5,329,489
Caterpillar Tractor Co.	14,459,957	27,389,486
Central Foundry Co.	390,308	411,735
Chance Vought Aircraft Inc.	4,748,226	2,125,989
Chrysler Corp.	(a)25,200,000	89,700,000
Clark Equipment Co.	2,655,488	4,321,752
Cleveland-Cliffs Iron Co.	3,012,163	5,415,562
Combustion Engineering Inc.	3,618,708	3,503,792
Continental Can Co. Inc.	16,958,000	19,575,000
Controls Co. of America	317,954	578,711
Cooper-Bessemer Corp.	1,531,562	2,800,691
Copper Range Co.	1,469,619	2,085,063
Eaton Mfg. Co.	3,043,801	6,586,156
Ekco Products Co.	1,357,712	1,755,254
Fansteel Metallurgical Corp.	644,977	1,742,279
Ferro Corp.	783,462	877,659
Firth Sterling Inc.	(a) 553,100	812,400
Foote-Burt Co.	(a) 124,998	438,965
Ford Motor Co.	5,400,000	171,000,000
General Cable Co.	3,151,352	6,521,270
General Electric Co.	103,381,000	127,823,000
General Motors Corp.	333,514,249	481,236,708
Gillette Co.	12,274,611	13,008,359
Hussman Refrigerator Co.	803,540	1,151,780
IBM Corp.	50,597,655	40,061,507
Interlake Iron Corp.	1,245,190	3,634,648
Johns-Manville Corp.	8,011,000	8,614,000
Kennecott Copper Corp.	22,959,071	49,331,408
Lamson & Sessions Co.	307,793	1,281,520
Mack Trucks Inc.	3,219,739	6,508,316
Manning, Maxwell & Moore Inc.	873,000	1,642,000
Martin Co.	3,590,271	4,425,932
Minneapolis-Honeywell Regulator Co.	8,955,587	10,304,470
Monarch Machine Tool Co.	142,717	678,485
National Cash Register Co.	7,244,557	8,183,297
New York Air Brake Co.	113,367	1,326,572
New York Shipbuilding Corp.	976,878	1,304,785
Polaroid Corp.	2,313,000	1,981,000
Radio Corp. of America	13,544,000	20,311,000
Reynolds Metals Co.	19,210,266	18,546,817
Ronson Corp.	66,568	729,542
Simonds Saw & Steel Co.	931,191	2,147,383
South Bend Lathe Works	149,705	594,035
St. Joseph Lead Co.	2,214,361	5,759,433
Sundstrand Machine Tool Co.	1,546,252	2,115,712
Sylvania Electric Products Inc.	2,582,870	4,788,669
Thompson Products Inc.	3,733,056	8,323,211
Timken Roller Bearing Co.	6,159,433	12,890,547
Towmotor Corp.	707,830	1,017,734
Transue & Williams Steel Forging Corp.	5,325	353,357
Union Carbide Corp.	49,901,375	69,601,905
United-Carr Fastener Corp.	825,068	1,760,807
U. S. Pipe & Foundry Co.	2,887,334	4,782,504
Vertol Aircraft Corp.	185,021	1,322,079
Wagner Electric Corp.	2,301,037	3,303,775
White Motor Co.	2,543,208	3,350,746
Worthington Corp.	4,163,006	4,868,268
Youngstown Steel Door Co.	437,009	1,603,133

(a) Net loss.

Steelmakers in Cellar, Too

(Net profit)

SELECTED COMPANIES	1958	1957
Acme Steel Co.	1,577,196	3,941,773
Alan Wood Steel Co.	339,000	1,436,000
Allegheny Ludlum Steel Corp.	1,371,967	7,742,092
Armco Steel Corp.	20,956,744	38,583,106
Barium Steel Corp.	(a) 1,060,431	*
Colorado Fuel & Iron Corp.	(a) 326,708	8,904,714
Continental Steel Corp.	1,669,754	1,686,310
Copperweld Steel Co.	(a) 207,138	1,989,981
Crucible Steel Co. of America	399,327	6,045,996
Detroit Steel Corp.	(a) 301,839	1,863,964
Eastern Stainless Steel Corp.	933,227	1,602,090
Granite City Steel Co.	3,896,583	6,249,956
Inland Steel Co.	20,079,731	29,764,456
Jessop Steel Co.	274,206	875,908
Jones & Laughlin Steel Corp.	5,691,000	26,593,000
Kaiser Steel Corp.	3,970,137	14,908,487
Lone Star Steel Co.	482,829	6,664,060
Lukens Steel Co.†	3,057,409	5,979,164
National Steel Corp.	10,329,188	26,108,847
Pittsburgh Steel Co.	(a) 1,532,659	3,621,323
Republic Steel Corp.	23,904,602	52,917,897
Sharon Steel Corp.	(a) 1,018,934	2,730,025
U. S. Steel Corp.	135,650,730	231,421,308
Washington Steel Corp.†	246,668	1,464,847
Youngstown Sheet & Tube Co.	7,812,741	21,924,309

1. Nine months. †24 weeks. (a) Net loss. *1957 not comparable due to spin-off of Republic Industrial Corp.

"will be just about the same" as 1957's despite a sales decline. Companies heavy in missiles are doing well. Example: Lockheed Aircraft Corp.'s first half earnings were 29 per cent above the year-earlier figure. More than one-fourth of its sales are in missiles and satellites.

Some other aircraftmakers expect notably poorer profits. Their reasons: 1. Commercial sales are declining. 2. Research and development costs are extremely high. 3. Missile programs haven't hit the "full production" stage.

Autos Look to Fourth—Barring a strike, carmakers and their suppliers look for a considerably improved last quarter after three poor-to-profitless periods. Chrysler Corp. showed a $25.2 million net loss in the first half. Ford Motor Co. showed a meager profit for the half after a $17.3 million second quarter loss. General Motors Corp. reports an earnings decline of about 30 per cent but it's far from running in the red. High note: American Motors Corp. shows a $14.6 million profit for its first three fiscal quarters, vs. a $6.5 million loss in the comparable '57 period.

Aluminum: Price Boost? — Producers of aluminum have noted increasing commercial sales in the last two months; they expect the trend to continue. Add to that the possibility of a 2 cent per pound price increase any day now and the outlook for earnings improves —despite a 24-cent-an-hour wage hike that went into effect Aug. 1.

Lake Carriers Association.

Seaway Tolls Contested

Lake Carriers Association opposes charges on Great Lakes vessels using Canada's Welland Canal. It's questionable too whether railroads will offer special lake port rates

A NEW skirmish in the battle will begin Wednesday (Aug.6) in Washington, when the St. Lawerence Seaway Development Corp. starts public hearings on proposed seaway toll levels. Previous hearings have been held on assessment methods.

The St. Lawrence Seaway Authority (Canada) will hold hearings the same day in Ottawa. The U. S. and Canadian groups have agreed on suggested charges for seaway users.

The Opposition—Vice Adm. Lyndon Spencer, president of the Lake Carriers Association, Cleveland, says that tolls on Great Lakes vessels using the Welland Canal would constitute a "violation of U. S. policy and U. S. and Canadian international policy." His group has no objection to tolls on seaway traffic using the canal.

Admiral Spencer points to the fact that about 75 per cent of the traffic through the Welland Canal is not seaway traffic. He says that tolls on commerce originating and ending on the lakes would add to the costs of goods produced or consumed in areas bordering Lake Ontario (New York State and the Province of Ontario). Consequently, a competitive disadvantage would be suffered by shippers and users of grain from the Upper Midwest, iron ore from Minnesota, Michigan, and Wisconsin, and coal from Pennsylvania and Ohio. The admiral says that tolls as proposed would increase cargo costs 4.5 cents a ton.

Should Be Absorbed—He points out that Canada is spending only $27.5 million on Welland Canal improvements (which is 19 per cent of the amount the U. S. is spending on its connections, such as the Detroit, St. Clair, and St. Marys Rivers, which are used free by Canadian ships).

Admiral Spencer insists that neither the U. S. nor Canadian governments intended lake vessels to pay such tolls; that charging such ships would not be "reasonably related to defraying the cost of a deep waterway from Montreal to Lake Erie"; and that the U. S. has proprietary interests in the canal and should have been consulted on the question of tolls.

He wants Canada to absorb the costs (as far as Great Lakes shipping is concerned). He has appealed to the U. S. State Department to take up the matter with Canadian authorities.

A Bottleneck?—Even without the fight over toll policy, the Welland is a problem. Some experts fear that the canal will not be able to handle the increased seaway traffic.

Their reasoning: In 1956, Welland and its eight locks handled about 23 million tons (its capacity is theoretically about 50 million tons). But delays already are developing. Some shipmasters are complaining that it takes a full day to make the passage from Lake Ontario to Lake Erie.

And the Railroads—Most transportation authorities agree that for the seaway to be successful it will be necessary for railroads to offer special rail rates to Great Lakes ports (as they do along the Atlantic Coast).

Since the rails were among the leaders in the fight against the waterway, many shippers are cauti-

ously waiting to see what they'll do before deciding on their own course of action.

Chances seem good that the railroads will finally decide to co-operate.

How Much?—Canadian and U. S. toll committees have agreed on the following rates:

For each passage through the entire seaway (Montreal to Lake Erie), vessels will be assessed 6 cents per gross registered ton of ship weight, 42 cents per ton of bulk cargo, and 95 cents per ton of general cargo.

For each passage from Montreal to or from Lake Ontario, ships will be charged 4 cents per gross registered ton of ship weight, 40 cents per ton of bulk cargo, and 90 cents per ton of general cargo. For partial transit of the new seaway facilities, users will be charged 15 per cent of the applicable toll for each lock.

Here is the item to which the Lake Carriers Association objects: For passage through the Welland Canal only, vessels will pay 2 cents per ton of ship weight and 5 cents per ton of general cargo. In the canal, a partial transit charge of 50 per cent of the toll will be assessed regardless of the number of locks used. Canada's Parliament authorized assessment of tolls to defray canal improvement expenses when it passed the St. Lawrence Seaway Authority Act in 1951.

Commercial passenger ships using the seaway will be charged 50 cents per passenger for each lock transited between Montreal and Lake Erie in addition to the vessel charge.

Collections—Toll payment methods are based on the necessity to keep ships moving in the seaway. Provision is to be made for prior registration of vessels and for satisfactory security to insure payment of charges. Tolls will be billed either to owners or agents and will be payable within seven days.

For through passage, invoices will show two payments due: One in Canadian funds to cover the amount due the St. Lawrence Seaway Authority (determined at 71 per cent of total charges), and the rest in U. S. funds payable to the St. Lawrence Seaway Development Corp. Tolls collected for use of the Welland will be payable to the Canadian group.

The division of revenues is based on current figures of estimated capital and operating costs and are subject to change as actual costs may indicate necessary.

How Long — According to estimates by both U. S. and Canadian toll committees, the suggested charges should be sufficient to cover the seaway's financial requirements (provided anticipated traffic develops). They believe that tolls will bring in enough money to cover annual operating and maintenance costs as well as interest charges and amortization of borrowed money over the next 50 years.

The committees estimate that traffic during the first year of seaway operation will be about 25 million cargo tons and will rise to 50 million by 1968. For Welland, the Canadian committee estimates cargo will hit 40 million tons in 1959, climbing to 60 million by 1968.

Traffic estimates by both groups include consideration of a development period extending to 1968 during which "there may not be enough revenue to meet all annual financial requirements."

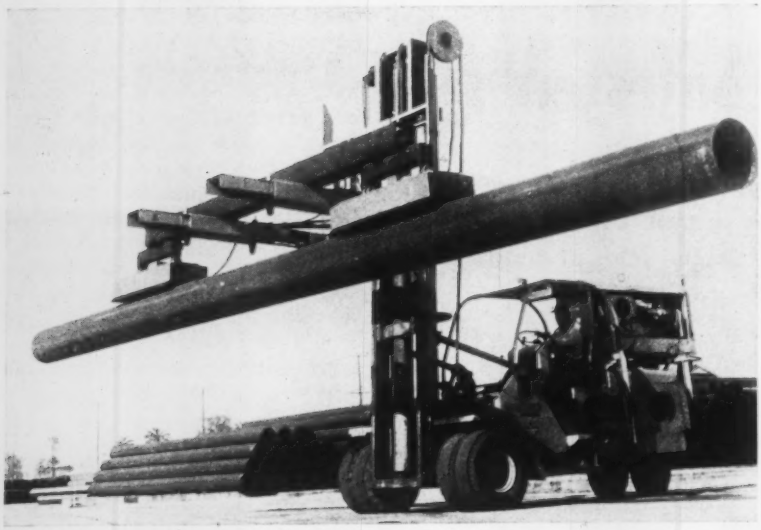
And if that sounds like a polite way of saying they won't be able to pay their bills, they maintain that increased traffic by 1968 will provide sufficient revenues to pay off deficits incurred during the first 10 years and meet requirements during the next 40-year period.

In Spite of It—Admiral Spencer's group expects to win its fight. Probably other objections will also be raised. But problems notwithstanding, the seaway should be successful because enough people want it to be.

Examples: In Chicago, a $37.5-million harbor improvement program is underway. Long range plans call for expenditures of about $125 million.

Milwaukee is working on an $11-million program.

All along the seaway, harbors and facilities are being dredged, built, and improved.



MAGNETS MAKE PIPE HANDLING EASY for this 11-ton fork lift truck. They pick up pipes from 2 to 30 in. in diameter and up to 60 ft long. When turned parallel to each other, they can lift several pipes at a time. Magnets for this unit, used by Southern California Gas Co., Los Angeles, were built by the F. W. Shrader Co., Los Angeles

Exports Rolling Mill

United Engineering & Foundry Co., Pittsburgh, recently completed the manufacture of a mill for the rolling of wide flanged beams directly from ingots. Estimated capacity: Over 700,000 tons a year. The mill has been placed in operation at the Lackenby Works of Dorman Long Co. Ltd., Middlesbrough, England. It makes available to English markets beams much larger than heretofore available, say United Engineering officials.

Modernizing Your Plant? First . . .

1. **Determine Production Quotas—by deciding which products will be retained, dropped, modified.**
2. **Analyze Products and Their Components — which parts should be bought and which made.**
3. **Check Production Facilities — what new equipment and processes are needed; what should be scrapped.**
4. **Prepare Optimum Layout — what is the best layout for you in view of data found above.**

Plan Before You Build

DON'T START mixing that mortar for your addition unless your modernization program has been well planned. A carefully thought out approach will help you avoid such penalties as duplication of facilities, overlooked opportunities for savings, excessive construction, and lack of co-ordination between the old and new, says Walter Kidde Constructors Inc.

Good planning, says Kidde, entails four major steps.

1. Production Quotas—Determine what products you should drop, add, or modify from reports of your marketing departments on past volume, predicted volume, and reasons for lost orders; a profit and cost breakdown on the new or improved products; and a cost analysis from the engineering department on the new equipment and processes necessary for the products.

2. Products and Components—New space and equipment can be closely estimated only if you consult reports from engineering, production, and purchasing on the advisability of making or buying components.

3. Production Facilities — While engineering and production are hunting ways to cut costs by combining, simplifying, or eliminating operations on the new or improved products, have engineering make a flow chart for you—including the manufacturing sequence, necessary equipment, handling, and monthly volume of each part.

With the flow chart and complete cost information, you are able to decide which parts you will make. Have the flow sheet revised to include only the products you have decided upon.

4. Optimum Layout — After consulting another report from engineering listing the amount of storage area necessary for materials, purchased parts, and completed products, make a preliminary layout and pass it around to the departments concerned for comment.

Remember that a good layout has raw material areas close to their point of use and assures that storage equipment permits simple and effective inventory control. Toolrooms, locker and washrooms, maintenance shops, and truck docks should also be in convenient locations.

After revising the preliminary layout in line with the comments, complete it by adding details such as headroom, overhead loads, and the necessary service requirements.

You now have a clear indication of how much you can expect to realize from your investment.

You are ready to mix the mortar for that cornerstone.

Egypt Industrializes

Nasser wants to make his country self-sufficient. New steel plant near Helwan marks another step

EGYPT'S first integrated iron and steel works was scheduled to be inaugurated on July 23 by President Nasser of the United Arab Republic.

The plant near Helwan has an initial capacity of 265,000 tons of ingot steel (the eventual goal is 500,000 tons). It marks a step in Nasser's plan to make Egypt self-sufficient for her ingot steel needs.

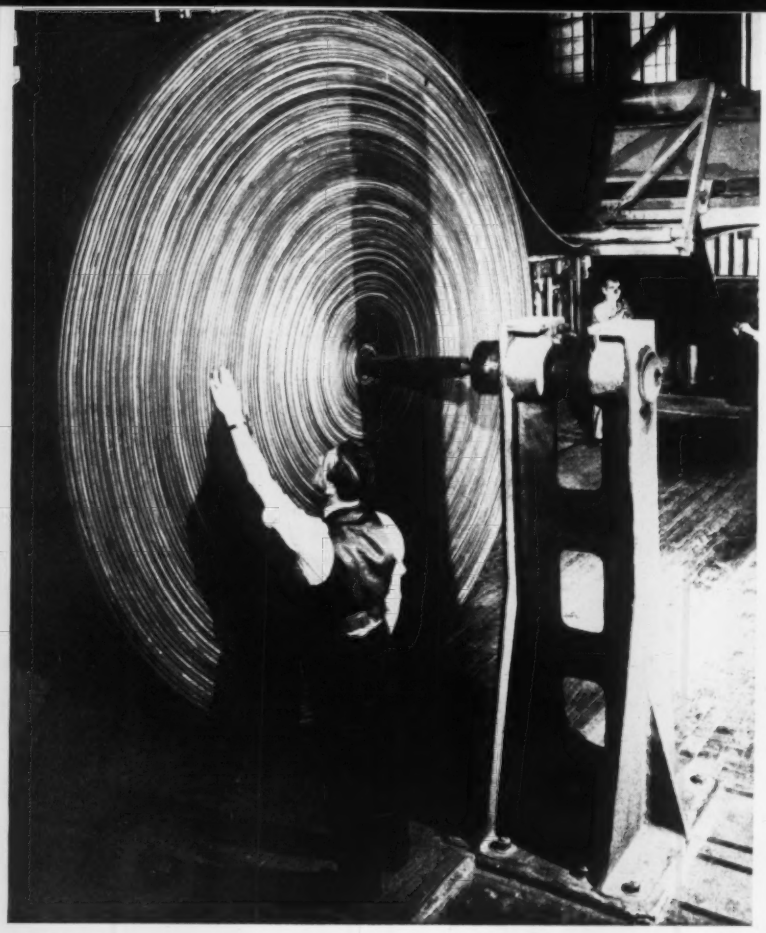
Equipment—Facilities are being furnished by Demag Aktiengesellschaft/Pressestelle, Duisburg, West Germany, under contract with the Egyptian government. The completed part of the works includes two blast furnaces, a steelworks, rolling mills, and auxiliary equipment.

The blast furnace plant includes a blower tank. The steelworks has an inactive mixer, three basic bessemer converters, two electric furnaces, lime and dolomite kilns. The rolling mills are comprised of a 2-high reversing blooming mill with soaking pits set up in front; a 3 stand, 2 high blooming and finishing mill; and a 3-high mill for heavy and medium plates; and a 2-high stand for sheets.

The mills have an annual throughput of 200,000 tons of billets, rails, sections, heavy and medium plates and sheets. Some billets will be sent to other Egyptian rolling mills for further processing.

Power and Supplies — The iron and steel works will have its own power station for generation of electricity. Surplus gas at the works will be used at the generating station.

Ore (about 47 per cent iron) is some 620 miles to the south near Asswan (where the Libyan desert starts). The Demag mining equipment has a yearly capacity of about 300,000 tons. Coke will be imported.



U. S. Rubber Co.

Products like this belting are stronger, weigh less as . . .

Rubbermakers Go Synthetic

MAKERS of industrial rubber goods are speeding up their use of synthetics. "It's the most significant development in our industry today . . . and has opened new horizons for industrial rubber," says R. B. Hazard, vice president of sales, Rubber & Packing Div., Raybestos-Manhattan Inc., Passaic, N. J.

Benefits—To metalworking, this means products offering better strength-to-weight ratios, more resistance to heat and corrosion, greater ease of handling, and more value per dollar spent.

One synthetic with large potential is urethane rubber. It is extremely hard and abrasion resistant but retains a high level of elasticity, resilience, and shock absorption. In one test, a urethane lining was added to a cast iron pump housing that had to be replaced every 350 hours. Result: The housing was still in satisfactory condition after 3000 hours.

Teflon (a corrosion resistant plastic), in combination with rubber, offers good potential for developing long lived products that will survive highly corrosive conditions.

Henry E. Pruner, marketing manager for U. S. Rubber Co.'s mechanical goods division, cites plastic pipe as a product with a future because of its corrosion resistance and lightness. He also points to burgeoning use of high strength synthetic fibers (combined with rubber) in conveyor belting. The belts are less bulky than others and have good strength-to-weight characteristics, says Mr. Pruner.

Allis Rubber Div., Allis Mfg. Co., Chicago, says silicones are finding a broad range of applications because of their high and low temperature characteristics and because they are semiresistant to oil. Allis estimates 90 per cent of its work is in synthetic rubber products.

More Uses—The rubber industry thinks synthetics will give it greater penetration of its markets: Automotive, oil production and refining, mining, iron and steel production, appliances, construction, railroads.

In the automotive field, rubbermakers point to the air spring, designed as a substitute for metal coil and leaf springs. Use has been small so far, but the industry believes the potential is great. (One company believes 10 to 20 per cent of 1959 models could use air springs.) The trend toward power steering and power brakes (which takes hydraulic hose) is another growth area.

A new hose that employs steel wire (in its carcass) is expected to find wide use in mining, construction, and petroleum operations.

One of the most dramatic examples of how synthetics can improve a product is the world's largest slope conveyor belt, built by U. S. Rubber for the Cleveland-Cliffs Iron Co.'s taconite iron ore mine at Ishpeming, Mich. This unit marks the introduction of rayon combined with nylon for high tension conveyor belt carcass construction, says U. S. Rubber. The conveyor is designed to haul 670 tons of low grade taconite iron ore an hour over a distance of 793 ft.

More Markets — New uses and new products are springing up everywhere. Quaker Rubber Div. of H. K. Porter Company Inc. sees aircraft ground support equipment as a coming market. The company recently developed an aircraft ground refueling hose for the Air Force designed to prevent swelling and loss of adhesion. It's said to produce maximum flexibility at $-65°$ F to $+130°$ F.

Missiles are another growth area. Some rubber applications: Water, oil, and fuel cells; expulsion and deceleration bags; flexible interconnectors.

Automation is upping the use of hose for power transmission, says C. O. DeLong, president, B. F. Goodrich Industrial Products Co. "Automated lines need hose to transmit steam, air, and hydraulic fluid."

Fewer Sales Now—Even with all its growth possibilities, the industry has felt the recession. Automotive business is running 30 to 35 per cent under what it was in 1957. Sales of the other industrial lines are off about 20 per cent. Major reason: Large markets (such as mining, oil, iron, and steel) have been among the hardest hit by the downturn. An example: "Mines and steel mills use a lot of conveyor belting, but our shipments to them are down substantially this year, reflecting their reduced operating rate," says R. B. Warren, general manager of the Industrial Products Div., Goodyear Tire & Rubber Co.

Makers believe that business has turned the corner and that their industry is on the rebound. The farm implement market is picking up, and construction shows spotty gains.

But the consensus is that 1958 will still end up well under year-ago levels.

Earnings Harder Hit—Profits of some firms are running as much as 50 per cent under last year's. Drop in sales isn't the only reason, say makers. The industry's 1493 companies have too much capacity (some are operating at only 60 to 70 per cent). The situation has made manufacturers more susceptible to pressures from price-conscious buyers. "You have to have a sharp pencil to do business today," says one sales manager.

"The profit picture now has a ghoulish glow rather than a healthy, florid complexion," says Glenn Mellinger, sales manager for Ohio Rubber Co.

What To Expect—In spite of current business problems, rubber executives are optimistic. Says one: "Progress in research is rapid. Look for better and more durable products combining greater strength-to-weight ratios, less over-all weight, easier workability, and better chemical and mechanical qualities."

Reform Depreciation—MAPI

Machinery & Allied Products Institute wants Congress to O.K. the triple declining balance method of writeoff (or something similar) to allow industry to catch up with inflation

ADD ONE MORE to the list of proposals for the permanent reform of our depreciation laws.

Machinery & Allied Products Institute suggests a triple declining balance writeoff, or, alternatively, an initial allowance of the British type sufficient to accomplish a similar result.

Reform Needed—STEEL on Apr. 28 came out for permanent depreciation reform, pointing out that our present policy is the most archaic among industrial nations of the world.

Many observers believe America's depreciation ills stem primarily from two sources—the Internal Revenue Service's rigid concept of useful lives for facilities and inflation. MAPI adds a third source—writeoff methods.

Partial Reform — The institute proposes to solve the inflation difficulty with a faster writeoff device. The Internal Revenue Code of 1954 authorized two new, faster methods of tax depreciation for assets acquired new after 1953—sum of digits and double-rate declining balance. "Those represented a great advance over the straight-line method employed before," says George Terborgh, MAPI's research director, "but they embody only half the program for reform."

MAPI shows what a speedup in writeoffs would do to total U. S. business tax depreciation (in comparsion with use of the double declining method) assuming:

1. That it is applicable only to assets acquired new after 1957.
2. That it is applied to present service life estimates.
3. That new installations after 1957 will regain their 1956-57 level by 1960 and will rise 5 per cent annually thereafter.

Results—The increase in depreciation by the triple method starts in 1958 at a little under $1 billion. Then it rises rapidly for several years, nearing $6 billion (the estimated present deficiency from inflation) around 1963. Beyond that, the rise is relatively gradual.

If you use the British approach (depreciate by double-rate declining balance and allow in addition a first-year writeoff of 25 per cent for equipment and 12.5 per cent for buildings and structures), the increase in depreciation starts high —around $7 billion for 1958—and declines gradually.

The former method is best if you want to start with a modest impact and build up over the years. The latter is preferable if you want a large immediate impact.

The Bracket Approach — MAPI discusses the bracket approach (recommended by STEEL, Apr. 28, p. 55), but strongly implies its preference for triple declining balance.

The institute acknowledges the simplicity of the bracket method: All assets could be classified into relatively few groups (17 in Canada, with a maximum declining-balance rate assigned to each). But it contends: "The principal disadvantage of this approach is the application of uniform rates to assets of widely differing service-life characteristics. Unless the number of categories is multiplied unduly, each must cover (too) wide a spectrum."

Rebuttal — Proponents, including STEEL, reply that such an objection has not unduly troubled the Canadians who have used the procedure since 1949.

Although students of reform may disagree on methods, all agree that reform is needed. All would echo this comment from MAPI's president, Charles W. Stewart: "Federal tax reform is not a dead issue merely because, for fiscal reasons, it was decided not to legislate reform this year. A major overhaul of the tax structure is absolutely prerequisite to the continued health and growth of this country. Basic thinking and formulation of recommendations must proceed expeditiously if we are to be ready to persuade Congress to act next year."

Surplus Tool Program Is Snafued

WASHINGTON's efforts to save the machine tool industry from a rising tide of used tools seem doomed. The Pentagon, particularly the Air Force, is determined to rid itself of as many excess tools as it can. Only tool-oriented personnel of the Office of Defense & Civilian Mobilization and the Business & Defense Services Administration remain to remind the Defense Department of its debt to, and need for, the industry. Congressional sentiment is running against the federal agencies and in favor of the Pentagon's point of view.

Officially, ODCM and BDSA personnel warn of perhaps 12,000 to 13,000 tools being declared excess in fiscal 1959 by Uncle Sam's various agencies, but, off the record, they are concerned that such estimates may be far too low. STEEL has told of plans to sell as many as 25,000 tools a year (July 29, 1957, p. 78).

Two Plans Aren't Working Out

To beat the Pentagon to the punch, two plans were developed this year:

1. The school tool program by BDSA and the Health, Education & Welfare Department.

2. An expansion of the National Industrial Equipment Reserve (NIER) by ODCM and General Services Administration. Neither plan is working out as expected. They may be working against each other.

Surveying U. S. schools, BDSA has found that they would like to have 50,000 to 100,000 tools for research and technical training. (Some tools they are using are over 50 years old; the average age of Uncle Sam's tools is about seven years.) But what the schools would like to have and what they could absorb in the next year are two different things. In 1953, only 10,000 machine tools were being used by the schools. ODCM questions their ability to absorb enough now to help the machine tool industry.

The ODCM-GSA program to transfer 5000 excess tools to the NIER in fiscal 1959 instead of 500 has been scuttled. The House Appropriations Subcommittee, under the leadership of Rep. Albert Thomas (D., Tex.), has voted to cut this fiscal year's request for funds from $3.5 million to $1.5 million. The slice may mean that only 2000 tools can be transferred leaving about 3000 potential NIER tools to be marked "surplus" and sold (plus at least 9500 others, or twice that if you listen to some Washington pessimists).

Of 8000 tools sold in the last fiscal year, one-third were scrapped. This year, more good, general purpose tools are marked excess, and the scrap percentage will be lower.

U.S. Agencies Can't Agree

The saddest thing about the situation may be a disagreement among government agencies as to how tools should be handled. It's reported that the NIER funds were slashed as a direct result of BDSA's claims in favor of the school program. Congress is not sold on the value of NIER, and with the huge deficit expected for fiscal 1959, the legislators are prone to cut funds from any unpopular appropriation they can, especially in the mobilization area.

As usual, the problem is to be met with a special task force: The old machine tool group which worked on rental rates, plus a Health Department representative. Because of relatively small employment per firm in the machine tool industry, some Washington sources report an attempt to beat the small business drums in Congress to stop the tool sales. That method of attack is somewhat suspect, however, because small firms would seem to be more logical buyers of used tools.

Consent Judgments Criticized

Because Justice Department decisions to accept consent judgments in antitrust cases often practically rule out redress by private parties (because of high court costs involved in overriding a Justice decision), the Senate Small Business Committee is demanding:

1. A reconsideration of over-all department policy.

2. A study by an outside group (perhaps the American Bar Association) designed to cut litigation costs.

The committee notes that 83 per cent of the Antitrust Division's civil cases were terminated by consent agreements in 1957, vs. 72 per cent between 1935 and 1955.

Conversely, the Federal Trade Commission reports "sharp increases" in complaints and orders to halt monopolistic and deceptive business practices during fiscal 1958. Eighty-six antimonopoly complaints were filed by FTC last fiscal year, compared with 55 in fiscal 1957.

GE's Case Brings Utility Survey

The Federal Power Commission is inventorying heavy electric power equipment purchased abroad and used by utility companies. General Electric Co. and the National Electrical Equipment Manufacturers Association petitioned ODCM, claiming imports of heavy equipment were a threat to national security and demanded relief under the Trade Agreements Act or the Buy American executive order.

Largest Automatic Precision Drill Locates, Drills and Counterbores Holes at Record Speeds

TAPE CONTROLLED MACHINE HAS AN ACCURACY OF .005" IN FULL 108" X 200" TRAVEL

Designed for aircraft work, the McKaymatic is a two dimension positioning and drilling machine that mounts three drill units on a gantry type carriage, permitting a selection of hole sizes or counterbores in a fixed work piece 9′ x 16′.

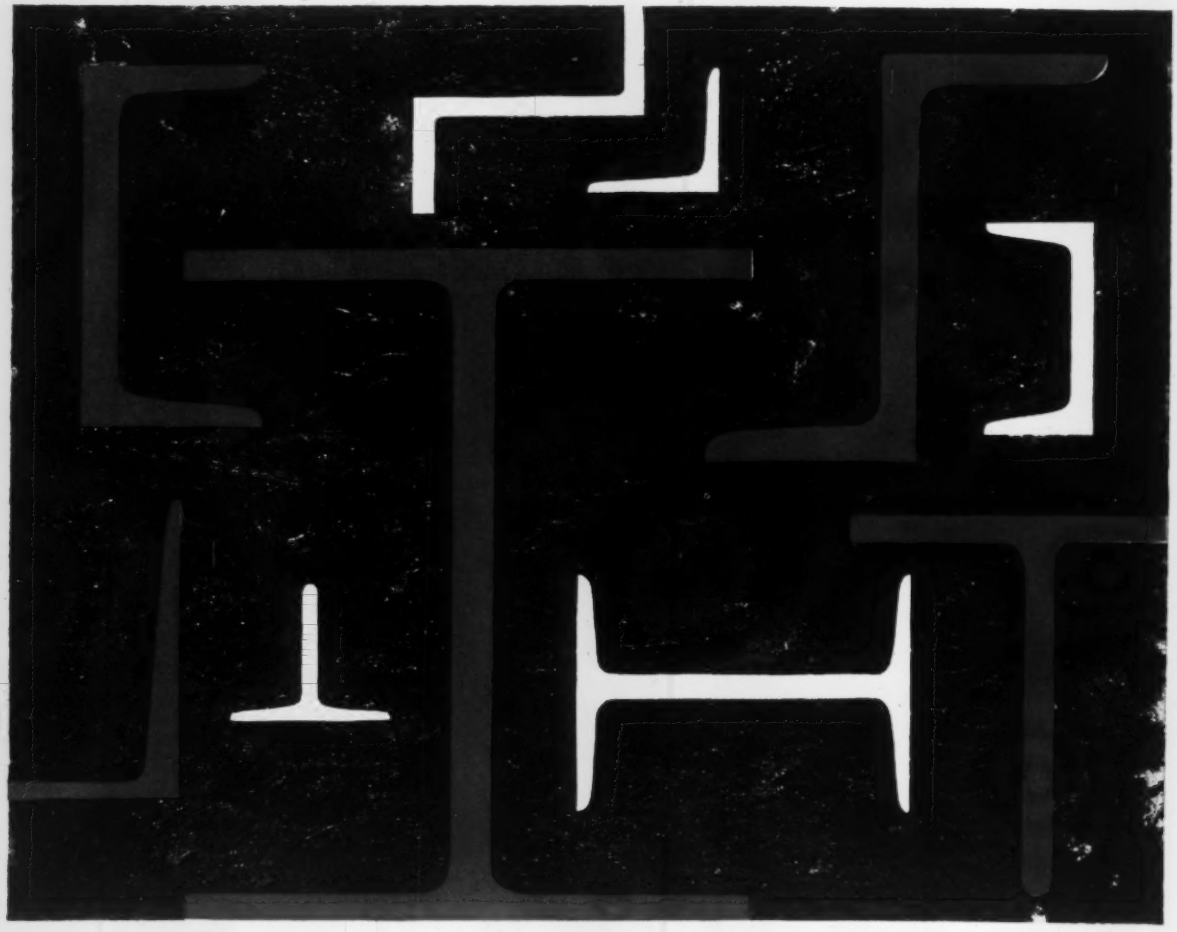
Hole locations are programmed by an engineer. This data is converted into a binary code on an 8 channel 1" wide paper tape. A tape reader and decoder relays the command information through a numerical, 2 dimension positioning control to servo drives in each axis. "Farrand Inductosyn Scales" mounted on the machine locate the drills to within .005" in the full 108" (y) and the 200" (x) axis travel.

A "zero" offset unit incorporated in the control system permits fast set-up. Templates are eliminated . . . layout time and human errors are eliminated . . . floor space requirements are kept to an absolute minimum.

Because the machine can work efficiently on short runs, and can be instantly "changed over" to other work, it will cut drilling costs in many metal working applications.

It's problem solving of this type that has made McKay an outstanding name in the aircraft, automotive, fabricating and steel industries. *The McKay Machine Company, Youngstown, Ohio.*

McKAY MCK MACHINE



Use quality USS Structural Steels

...available at your local steel service center

Because of the wide-range distribution of USS Structural Steels, you'll find them available on a moment's notice at your nearby steel service center. These fine, quality-controlled USS Structural Steels are accepted and acknowledged everywhere.

Your steel service center can readily furnish you with USS Structural Shapes in both hot-rolled carbon and USS COR-TEN grades.

Remember, as a part of the American Steel Warehouse Association, your steel service center has been set up specifically to handle your immediate steel demands. So the next time you order structural steels from your steel service center, be sure to specify *USS Structural Steels.*

USS and Cor-Ten are registered trademarks

USS United States Steel

AMERICAN STEEL WAREHOUSE ASS'N.

Operations research to the rescue as . . .

Cummins Controls Inventory

DESPITE high inventories, Cummins Engine Co., Columbus, Ind., suffered shortages of parts at the assembly line. It remedied the situation through operations research.

Shortages of this sort lead to costly expediting, special setups, interrupted production runs, shipping delays, and pileups at inspection and testing stations. High inventories tie up working capital and lead to unnecessary obsolescence.

Gear Your Thinking—Cummins' management wanted more than just an immediate solution to its problem. Goal: A system that would give optimum control over inventories and production scheduling for the long pull.

Seeking a fresh approach, Cummins called in Case Institute of Technology's Operations Research Group. Its job: Solve the problem and train selected company personnel in OR at the same time (through their participation in the study).

Analyze the Situation—The OR team (two Case men and two Cummins men) first familiarized themselves with the company's operations and objectives. It then investigated all areas that could affect availability of parts.

Find the Cause—Needed were: 1. A revised order processing system. 2. Redesigned material control and production scheduling activities. 3. A simple way for clerical personnel to compute inventory needs and schedule production.

Simplify Order Processing—Under the old system, it took 16 working days to process an order. Since most customers specified delivery in 45 calendar days, half the leadtime was consumed by paperwork. That caused a lot of "hot" orders, leading to errors and excessive costs.

There were far more changes to orders than original orders due to inadequate field information, poorly organized files of optional components, and lack of a system for controlling engineering changes. (Often, new parts were designed unnecessarily.)

Such duplication was eliminated and processing time was slashed from 16 days to five. Here's how: 1. Order interpreting and specification writing functions were combined. 2. A file of optional components was set up so application engineers only have to examine orders needing special parts rather than all orders. 3. Comprehensive application and price manuals plus new sales order forms were given to dealers. 4. A data processing center, using an IBM 650, was established where orders are "exploded" so that part requirements are known immediately. (It previously took up to 40 days to gain knowledge of all special parts.)

Revise Production Scheduling—The new production scheduling system works this way: Upon receipt, each order is assigned a tentative assembly month. Each week, an assembly schedule is set for the fourth week hence. From that, part production schedules are derived. A firm assembly schedule is set each day for the eighth working day hence. From that, subassembly schedules are set and the inventory chargeoff for parts is determined. That way, inventory figures on all parts are kept current.

Control Inventories — Cummins carried large cushions of components due to extreme variability of demand and the delivery latitude allowed suppliers. Needed: A system to closely control delivery schedules and immediately reflect demand changes.

The OR team developed formulas to determine when each part should be reordered. They're based on estimated demand during the leadtime period, the unit cost of carrying inventory, and the unit cost of shortage. Parts fall into four classes according to their demand pattern. Using a nomograph, the reorder level for a part can be quickly found by knowing average monthly demand, range of demand (maximum-minimum), the leadtime, and the part class.

Example: A Class 2 part with average demand of 600, a range of 250, and leadtime of two months must be reordered when inventory drops to 1560. That's because 1200 will be needed during the leadtime period and the nomograph shows the cushion should be 360 parts. Now, ordering parts at exactly the right time can be handled easily by a clerk. An IBM 650 makes routine decisions.

Reports are issued listing only the parts that have to be reordered. Master schedules are issued for major parts; summary reports show raw inventory, in-process inventory, and finished stock.

Of 25,000 active parts, 5000 are not controlled in the data processing center. They're small, inexpensive items, such as fasteners

which are controlled by a visual bin system. Cards in each storage bin list the appropriate reorder level and quantity. When inventory reaches the specified level, the card is pulled and used as a purchase order.

Control the Results—Since an automatic production control system perpetuates errors, stringent controls have to be incorporated into the system. Limits are established to provide immediate feedback when there are any unexpected changes in customer demand. Because a great variation in demand can outmode the system, it's re-evaluated periodically.

The new method takes into account the advantages of buying at quantity discounts. A decision rule can be easily applied to show what size purchase is most economical.

Says Richard B. Stoner, Cummins' vice president-manufacturing: "The changes enabled us to obtain cost benefits immediately and to continue them each month. We anticipate even greater success." The company has set up its own OR staff.

$3 Billion for Ships

Shipbuilders have launched what they say is America's largest peacetime replacement program. Twelve cargo and passenger carriers are rebuilding their vessels at a cost of $3 billion. Manufacturers and suppliers in every state will benefit, reports the Committee of American Steamship Lines, Washington.

Industry is expected to feel the impact of the program 10 to 15 years. CASL believes about half the investment will be paid to labor. Most of the remainder will go to producers of steel, nonferrous metals, and other supplies.

Four ships are nearing completion. They represent an investment of over $100 million. Keels for another 18 will be laid before yearend. At least 282 ships will be built. Negotiations between the government and the shipping industry could add 25 more.

Ship operators believe this project will enable them to compete aggressively in world trade while maintaining ships to serve as troop and cargo carriers in a national emergency.

Labor Arbitration Cases Up

American Arbitration Association.

• THE AMERICAN Arbitration Association will administer 3000 labor cases this year, vs. 2598 in 1957 and 2175 in 1956.

Although AAA is involved in only a fraction of the total cases, its figures indicate the trend: Arbitrations are increasing at the rate of 15 per cent annually.

Management Take Note—That's of concern to metalworking's managers because industry's won-lost record could be markedly improved. It's tough to figure a precise box score because of the frequent divided rulings, but here's how AAA sees trends in a recent sampling:

Discharge Cases

For management	46.4%
For labor	18.7
Divided	34.9

Discipline Cases, Except Discharge

For management	56.3
For labor	33.3
Divided	10.4

Seniority Cases

For management	54.8
For labor	42.2
Divided	3.0

Job Evaluation Cases

For management	57.0
For labor	31.4
Divided	11.6

Incentive Plan Cases

For management	51.4
For labor	34.6
Divided	14.0

Kinds of Cases—The most common (about 25 per cent) involve discharge and discipline. In 1957, job evaluation accounted for 23 per cent, seniority 13 per cent. This year, the many layoffs have boosted the seniority load and that problem will account for about 20 per cent of the volume.

The recession is the reason for much of the increase in the case load this year. "Obscure contract language on discharge, layoff, and recall matters have led to all kinds of grievances," says Hubbard Capes, legal counsel for Associated Industries of Cleveland. "Also more common are management-rights cases, such as the extent of subcontracting. Industry is getting tougher about these matters, but too frequently discovers that its

15% in '58; How Management Can Win More

1. **Make your contract simple and clear. Most grievances arise because parties dispute the meaning of contract language.**
2. **Train foremen to know your policies, your contract, and grievance-arbitration procedures. They're key men because most grievances start with them.**
3. **Keep records of every grievance, its disposition, and the ruling of the arbitrator if it goes to arbitration.**
4. **Pick an experienced man to handle your case—preferably your own labor relations director, but if you haven't got one, employ an outside specialist. Know your facts; round up your witnesses.**
5. **Beware of token cases where you know your position is weak but you believe you must support a supervisor who erred.**
6. **Pick your arbitrator with care. Is he experienced? Impartial? Does he split many decisions and otherwise play politics to get business?**

labor pact's wording is ambiguous, a heritage of more careless boom-time days."

Arbitration has shown long term gains as a method of peacefully settling grievances because it has become accepted as a practice by many courts, because it is more commonly included as a problem solving method in contracts, and because of the greater number of multiyear contracts. When a pay pact runs two or three years, labor leaders have fewer chances to demonstrate their merits to constituents. Arbitration is a handy forum.

The Foreman's Role—The supervisor is management's key to winning more cases (see checklist). Most grievances start with him. His diplomacy can often settle a problem before it ever need go to arbitration, the last step in the grievance procedure.

Nearly all the discipline cases directly involve him. If he uses bad judgment, management must make the tough decision to back him regardless and take a chance on a weak case, or admit he's wrong and risk weakening his authority.

The arbitration procedure is quasi-legal, so your position must be prepared as for a lawsuit. "Too often, one side or the other loses a case because of careless preparation," say Joseph G. Stashower, Cleveland arbitrator. (For tips on preparing your case, see STEEL, July 22, 1957, p. 60.)

Not Enough Arbitrators—"There aren't enough accepted arbitrators," complains Calvin W. Cutler, AAA's regional manager in Cleveland. His organization maintains lists of arbitrators and submits names when requested and will also, for a fee, administer cases. Thousands of lawyers, educators, clergymen, and specialists offer their services, but relatively few judge many cases. Most top arbitrators belong to the National Academy of Arbitrators, which has only 240 members.

Companies and unions are too reluctant to accept new men as arbitrators, says Mr. Stashower. The result is that the accepted men are overloaded, and cases often can't be decided promptly. Mr. Stashower also charges: "Arbitration—or the threat of it—is too often used as a club to win a settlement." A grievance is unresolved, the arbitration hearing date set, but the case gets solved just before the hearing.

Arbitration's Cost — An under-the-gun settlement may result because you don't go to arbitration lightly. The umpire's decision is binding, and it may go against you and set expensive precedents. Even the cost of the procedure is not small. The average one-day hearing costs $300, split by both parties. If AAA administers the matter, that's $60 more—also split by the parties. The typical arbitrator charges $100 a day, plus expenses, for hearings, preparation, and rendering of his decision.

Comments Arbitrator Stashower: "It makes for better industrial relations to settle by negotiation than by arbitration. I'm sure more cases could be settled before they reach men like me."

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.*

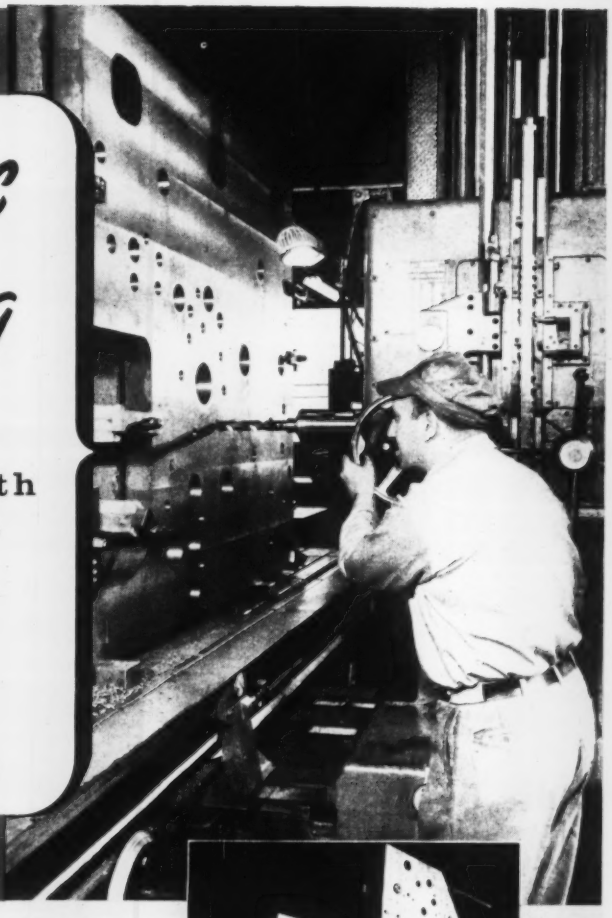
Automatic Positioning

Reduces Production Costs with

BULLARD

H.B.M.

MODEL 75



The experience of George Hantscho Company, Inc., Mount Vernon, New York, builders of equipment for the printing industry, is typical of that enjoyed by users of Bullard H.B.M., Model 75.

THE PROBLEM

To bore 105 holes, from 5" to $\frac{1}{2}$" in diameter, in both side frames of paper folding machine to support rollers, gears and folding cylinders. Some holes must be aligned vertically and others horizontally.

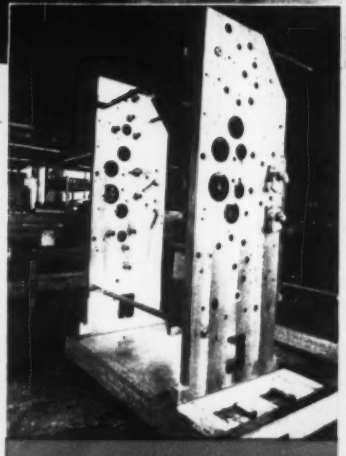
THE SOLUTION

Mount pair of side frames, $\frac{5}{8}$" apart, on table of 4" Bullard H.B.M., Model 75, equipped with automatic table and head positioning. Bore all holes of the same size beginning with the largest and working down to the smallest.

THE ADVANTAGES

All related holes in perfect alignment — no spoilage. Less tool change-over time.

Eliminate hand measurements and templates for hole location. Accurate automatic hole location within a tolerance of ±.0004". Ease of operation from Pendant Control — less operator fatigue. Overall boring time reduced 25% over previous method.

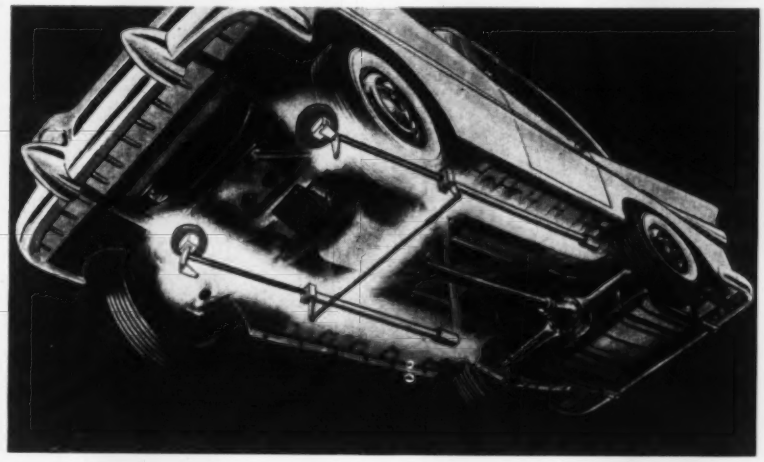


Partially assembled side frames ready for ink rollers, gears and printing cylinders.

How about your boring problems? Are you applying all the advantages of a Bullard H.B.M., Model 75 to them? If not — get the full story from your nearest Bullard Sales Engineer or write

THE BULLARD COMPANY

BRIDGEPORT 9, CONNECTICUT



Units sketched under passenger car are more popular than air bags

Torsion Springs Still Strong

FAILURE OF AUTOMAKERS to sell many air suspension units this year has been bringing "I told you so" smiles from leaf, coil, and torsion spring producers. More important, it has caused the builders to re-evaluate their products. The result is a rash of ideas in conventional springing systems that may keep air bags in the minority indefinitely.

Ward's Automotive Reports says the industry will install fewer than 100,000 air springs on 1958 cars—about 2.5 per cent of the model year's output and less than half the number carbuilders had hoped for. Critics claim the big reason for the lack of sales is that buyers can't tell the difference in the ride. (There's only about 11 cycles per minute difference in the frequency rate between coil and air springs in Cadillac's system.)

$$$$$$$$—Actually, this is only one of the reasons. The big difference is cost. Air springs run $125 to $215 higher than typical steel spring arrangements. One indication that cost is a major factor pops up in *Ward's* statistics that show Cadillac to be the big air spring user with 12 to 15 per cent of its output in bellows, vs. less than 1 per cent for Ford and Rambler.

But costly or not, auto companies have sunk too much money into air spring tooling to junk them, and indications are they will continue as optional equipment for some time. Meanwhile, venders who build regular suspension systems are doing what they possibly should have done ten years ago—start looking for ways to improve their units without boosting costs completely out of sight.

Why Change? — Most work has been on torsion bars which first appeared on Packard and later adopted by Chrysler for its lines. Chrysler, incidentally, will introduce optional air springs on some of its 1959 models, but Detroit sees it more as a sales gimmick than a serious attempt to market the bellows.

Among more recent developments are split, hairpin, and laminated torsion units. Eaton Mfg. Co., Cleveland, has been active in researching laminated torsion bars. The laminated units (now used on Volkswagens) are reportedly 12 to 15 per cent less expensive to make because they're little more than strips of steel (SAE 6150) which are cut off and stacked six deep to form a torsion bar. This eliminates the manufacturing operations needed to upset the ends of cold finished bars used in Chrysler's system. The laminated setup offers more safety because one leaf can split without dropping the whole body on the axles, which is what happens when an air bag springs a leak.

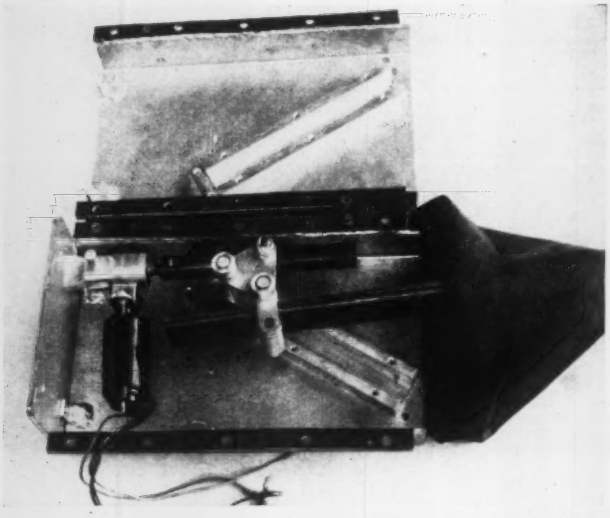
Shorter, Too—Mather Spring Co., Toledo, Ohio, likes the laminated bars not only because they cost less but also because they don't have to be as long to give the same ride characteristics. Richard E. Hanslip, Mather's chief development engineer, says laminated rods will be 25 per cent shorter than bars doing a comparable job. But he admits: "The laminated bars do have a 12 to 13 per cent weight penalty over round bars."

A GM suspension engineer agrees with Mr. Hanslip and adds: "All this means is that laminated bars look like a better bet for a smaller car where weight isn't as big a problem." Right now that's something GM is interested in, and it will be cheaper than the air-hydraulic system Chrysler reportedly is investigating.

And Safer—It's also possible laminated bars may be the answer to another problem common to torsion suspension systems—socket wear. Present torsion bars are seated in socket housings; bar flexing results in loose fittings. There have been few reports of bars slipping out, but it is a potential safety hazard and also a factor which affects damping characteristics.

Mr. Hanslip says Mather has been bending the ends of laminated bars at angles so they can be bolted in place. He believes tests will prove

(Material in this department is protected by copyright, and its use in any form without permission is prohibited.)



This mechanical levelizer has been developed by Mather Spring Co. to be used with leaf springs. The company figures it can be built for less than half the cost of similar units now on the market. The unit is mounted on the frame behind the rear axle. A switch between the frame and axle starts the reversible electric motor when extra weight is added to the body. The motor pushes out a screw jack which forces the end of the spring down into the tracks. This shortens the spring and raises the body and the spring rate at the same time. Result: Ride characteristics remain the same no matter what position the spring is in. The levelizer will correct for 750 lb of extra load on the rear axle. It can be turned on or off by switches in the door frames, rear deck lid, and dash

this is an economical fastening method that will eliminate socket wear problems. He adds that interleaf friction between laminations does not appear to be serious.

Other Ideas — While laminated torsion bars appear to be best suited to smaller cars, Mather thinks its split tube torsion springs may be as economical and perhaps better suited to larger automobiles.

The split tube is simply a torsion bar doubled back on itself. In effect, this makes a spring that Mr. Hanslip says is 73 per cent of the length of a round bar and gives 10 per cent more twist. Result: More variable reaction to wheel bounce and a softer ride than can be obtained from a solid bar of the same length.

Another design developed by Mather is a hairpin spring. Mr. Hanslip says it can be compared to the outside bars of a laminated pack with middle ones removed. Between the flat bars is a conventional round torsion bar. This device is used on heavy duty truck-trailers. It eliminates a series of small, short-lived gears which help transmit torque from one torsion unit to another.

Leaves Lively—Torsion bars are just as costly as coil springs, but a lot easier on shock absorbers. Mr. Hanslip believes there's plenty of life left in leaf springs. As he puts it: "Leaf springs are a complete suspension in themselves. They provide a comfortable ride, absorb shock, keep the rear wheels in contact with the road, and transmit driving force of the wheels to the automobile body."

He points out that air suspension system don't hold axles in place; additional stabilizing devices, torque rods, and tracking systems are needed. As a result, Mr. Hanslip says: "While the air springs themselves may be fairly light, all the extra holding, damping, and auxiliary gadgets are more expensive and add to the total weight." The leaf spring also has only two ways for road shock to travel up into the body (through the two mounting eyes), but with air suspension there are many paths by which road jars and bounces can be transmitted to the rider. One item still lacking in leaf springs is a simple levelizer and Mather may also have the answer to that (see photo).

Don't Stagnate—The spring story boils down to this: Air springs won't be scrapped because the industry has too much money invested in them, and they seem suitable for trucks. But if suppliers get busy and explore all the potential in leaf, coil, and torsion units, it will be a long, long time before bellows are standard equipment on Detroit products.

Argentine Willys Expands

Industrias Kaiser Argentina, an affiliate of Willys Motors Inc., Toledo, Ohio, will build a $1-million integrated forge facility at its automotive manufacturing plant in Cordoba, Argentina. Steel Improvement & Forge Co., Cleveland, will supply another $1 million worth of equipment. IKA builds Jeep vehicles and the Kaiser Carabela passenger car in Argentina—currently at an annual rate of 24,000 units. About 70 per cent of the vehicles (by weight) are built there.

The joint venture by Willys and Steel Improvement will result in a forge plant scheduled to produce 10,000 tons of forgings by the end of 1961. Most of the output is for use in Jeeps and cars, but Willys says a limited quantity will be available for Argentine railroad, shipbuilding, and aircraft industries.

U. S. Auto Output

Passenger Only	1958	1957
January	489,357	642,090
February	392,112	571,098
March	357,049	578,826
April	316,503	549,239
May	349,474	531,365
June	337,355	500,271
6 Mo. Total	2,240,850	3,372,889
July		495,629
August		524,354
September		284,265
October		327,362
November		578,601
December		534,714
Total		6,117,814
Week Ended	**1958**	**1957**
June 28	92,277	125,909
July 5	35,273	73,682
July 12	73,062	111,943
July 19	85,533	117,205
July 26	86,578†	119,857
Aug. 2	80,000*	119,323

Source: *Ward's Automotive Reports.*
†Preliminary. *Estimated by STEEL.

ARISTOLOY TURNED GROUND AND POLISHED ALLOY BARS

Complete information about Aristoloy electric furnace steels available as billets, blooms and bars. Write today.

ARISTOLOY STEELS

These precision products combine close size tolerances with good surface finish and freedom from surface defects. They can often be used with little or no additional finishing. Available $^{11}/_{16}$" to 4" round in a full range of A.I.S.I. standard analyses, as well as carbon, leaded carbon and alloy, or stainless.

COPPERWELD STEEL COMPANY • ARISTOLOY STEEL DIVISION

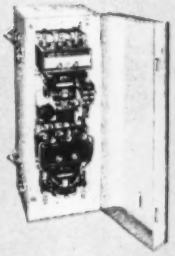
4005 Mahoning Ave. • Warren, Ohio • EXPORT: Copperweld Steel International Co., 225 Broadway, New York 7, N. Y.

ALLEN-BRADLEY *Quality* Reduced Voltage Motor Starters

AUTOMATIC GRAPHITE RESISTOR TYPE

Graphite disc resistors are automatically inserted in series with the squirrel cage motor at starting. These resistors can be steplessly adjusted for motor and load conditions, resulting in remarkably smooth acceleration of the motor.

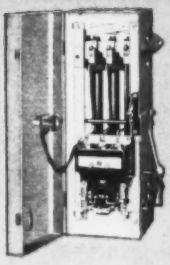
BULLETIN 740



MANUAL STEPLESS RESISTANCE TYPE

Graphite compression disc resistors provide smooth, stepless starting of polyphase squirrel cage motors—prevent lamp flicker. Operated by a hand lever, the smooth starting of the motor is under the control of the operator.

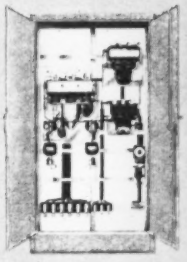
BULLETIN 640



AUTOMATIC MULTIPOINT RESISTANCE TYPE

Meets power company starting current rules on network systems. Resistors are automatically inserted in the line at starting, and are short circuited in steps at definite time intervals which can be adjusted from 1 to 5 seconds.

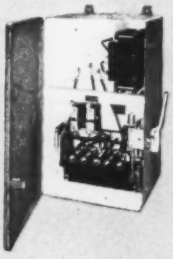
BULLETIN 741



MANUAL AUTOTRANSFORMER TYPE

Recommended where the characteristics of the driven load or power company rules require reduced voltage starting. Double break, silver alloy contacts are standard for air-break starters . . . copper contacts for oil-immersed units.

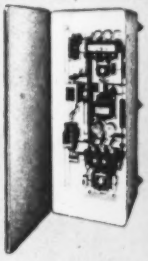
BULLETIN 646



AUTOMATIC STEPLESS GRAPHITE RESISTOR TYPE

The ultimate in velvet smooth acceleration of squirrel cage motors. Lamp flicker on network systems used for both power and light is eliminated. The graphite disc resistors are compressed automatically . . . smoothly and steplessly.

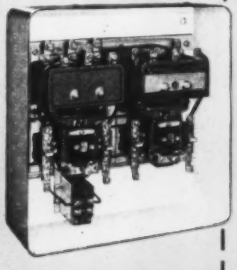
BULLETIN 742



AUTOMATIC PART-WINDING TYPE

For use with squirrel cage motors having two separate parallel stator windings. Two types—Style A, two step starter; Style B, three step starter having resistance in series with motor on the first step.

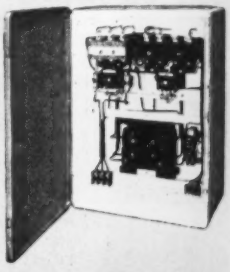
BULLETIN 736



AUTOMATIC AUTOTRANSFORMER TYPE

Utilizes an autotransformer connected in open delta to reduce line voltage for starting squirrel cage motors. Taps are provided on the autotransformer to adjust the voltage applied to the motor.

BULLETIN 746

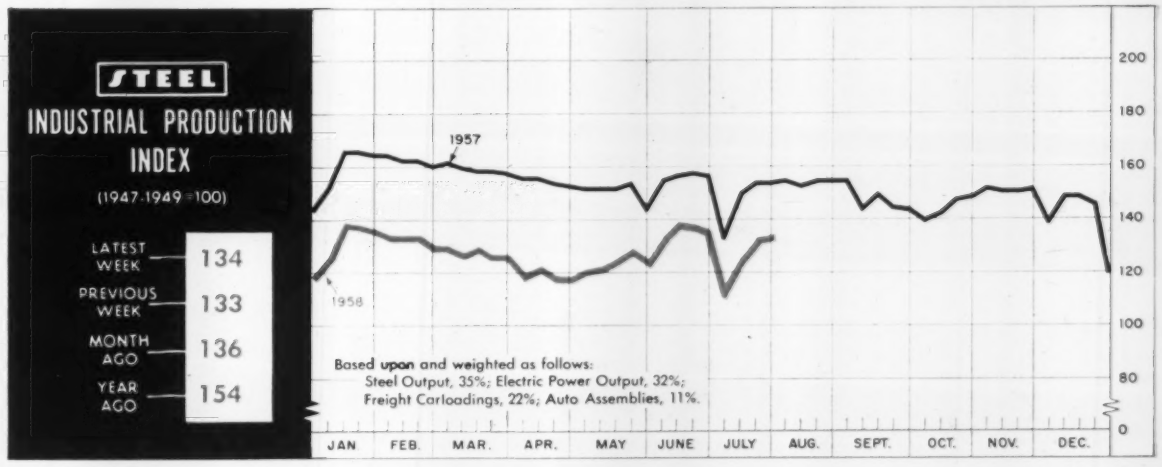


A-B QUALITY

The Sign of QUALITY Motor Control

ALLEN-BRADLEY MOTOR CONTROL QUALITY

Allen-Bradley Co., 1315 S. First St., Milwaukee 4, Wis.
In Canada: Allen-Bradley Canada Ltd., Galt, Ont.



*Week ended July 26.

Appliances up as Consumers Spend More

APPLIANCE BUYING trends may be the first indicator that consumers can stop the recession in its tracks in the late third or early fourth quarter. Although steelmakers report no major pickup in orders from appliance makers (and a sudden strike at General Electric's Appliance Park, Louisville, slowed production early last week), there are abundant signs of an increase in appliance sales.

Once the inventory of unsold goods is depleted, steel orders are certain to gain. This should give the economy a brighter hue by the end of this year.

Gains at GE — General Electric Co. reports June appliance sales exceeded year-ago totals—the first time this year that any month topped the similar 1957 period. Company officials say inventory reduction was largely completed. Adds James H. Goss, vice president: "The upturn has not been spectacular, but we think the balance of the year will see our sales increasingly generally."

And at Westinghouse—"A gradual gain in sales has taken place over the last month. Although it's moderate, a variety of products are affected," comment appliance sales officials at Westinghouse Electric Corp., Pittsburgh.

Hot weather stimulated the advance in some appliance sales, says Dun & Bradstreet Inc. Demand for air conditioners and fans expanded last week.

Weather can't explain the strength of other appliance lines. Interest in refrigerators, dishwashers, and automatic laundry equipment perked up in May and remains high. The American Home Laundry Manufacturers Association, Chicago, says June factory sales of home laundry appliances amounted to 350,073 units, up 13 per cent from May. June was the second consecutive month that sales showed an increase over the preceding month and the year-ago period. Leading the advance are dryers, up 29 per

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,586[1]	1,546	2,092
Electric Power Distributed (million kw-hr)	12,200[1]	12,257	12,243
Bituminous Coal Output (1000 tons)	7,645[1]	1,320	9,940
Crude Oil Production (daily avg—1000 bbl)	6,550[1]	6,528	7,101
Construction Volume (*ENR*—millions)	$455.4	$733.0	$393.6
Auto, Truck Output, U. S., Canada (*Ward's*)	108,870[1]	109,811	150,605
TRADE			
Freight Carloadings (1000 cars)	580[1]	582	736
Business Failures (Dun & Bradstreet)	279	275	266
Currency in Circulation (millions)[3]	$31,217	$31,375	$30,999
Dept. Store Sales (changes from year ago)[3]	+2%	+5%	+5%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$23,180	$23,657	$21,569
Federal Gross Debt (billions)	$275.8	$275.6	$272.8
Bond Volume, NYSE (millions)	$24.9	$27.5	$15.6
Stocks Sales, NYSE (thousands of shares)	18,581	15,415	9,032
Loans and Investments (billions)[4]	$94.2	$94.5	$87.1
U. S. Govt. Obligations Held (billions)[4]	$32.2	$32.3	$25.6
PRICES			
STEEL's Finished Steel Price Index[5]	239.15	239.15	239.15
STEEL's Nonferrous Metal Price Index[6]	198.6	198.7	216.6
All Commodities[7]	119.3	119.3	118.0
Commodities Other than Farm & Foods[7]	126.0	125.7	125.4

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

Coming . . .

August 11 in

STEEL

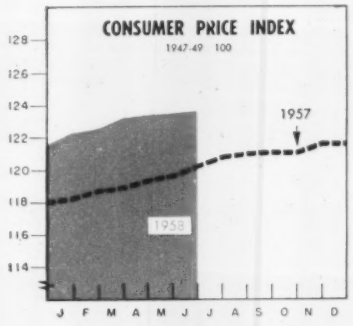
Hard-Time Selling

Successful selling in other than boom times rests on management knowing the right answers to some sticky questions.

What can be done to insure maximum production from salesmen? How can the number of calls per salesman be increased? How can more thorough coverage of prospects be attained? How flexible should prices be? Is quality the big selling point rather than price? How big a factor is delivery—should it be stressed?

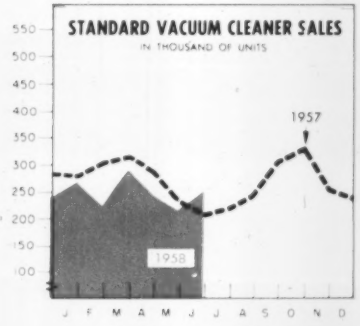
STEEL will explore these and other questions in the Aug. 11 issue. After years of prosperity, selling sometimes becomes a forgotten art. The company that expects a profitable operation is going to have to take a penetrating look at its sales setup. The Aug. 11 story will tell how to do it and what to look for.

THE BUSINESS TREND



	1958	1957	1956
Jan.	122.3	118.2	114.6
Feb.	122.6	118.7	114.6
Mar.	123.3	118.9	114.7
Apr.	123.5	119.3	114.9
May	123.6	119.6	115.4
June	123.7	120.2	116.2
July	....	120.8	117.0
Aug.	....	121.0	116.8
Sept.	....	121.1	117.1
Oct.	....	121.1	117.7
Nov.	....	121.6	117.8
Dec.	....	121.6	118.0

U. S. Bureau of Labor Statistics.
Charts copyright, 1958, STEEL.



	1958	1957	1956
Jan.	265,489	276,738	302,203
Feb.	225,631	300,887	286,386
Mar.	291,418	312,746	395,686
Apr.	247,293	281,627	352,873
May	218,766	231,246	326,008
June	253,127	207,286	248,326
July	.....	218,276	259,774
Aug.	.....	241,218	276,932
Sept.	.....	302,869	320,278
Oct.	.....	328,655	371,998
Nov.	.....	251,123	300,381
Dec.	.....	237,501	281,025
Totals	.....	3,190,172	3,721,870

Vacuum Cleaner Mfrs.' Assn.

cent from May and up 14 per cent from June, 1957.

Sales of standard-size household vacuum cleaners in June were added proof that the American homeowner is beginning to increase his appliance buying. The Vacuum Cleaner Manufacturers Association, Cleveland, says sales in that month were 22 per cent higher than they were in the corresponding month of 1957. June totals were "substantially" better than those of previous months, the association comments. The first six months of this year were 6.8 per cent below the similar period of 1957.

More Gains Needed—While the reports encourage optimistic second half business predictions, few business analysts are willing to predict an early end to the recession. An increasing number of business reporters believe that the downtrend in general business activity has come to a halt, having touched bottom in April or May. Before trendlines can gain much momentum on the upside, improvement in several other areas is a must.

In Housing—Although the start rate is advancing, figures on mortgage recordings don't reveal any important uptrend in rate of new home sales, says the National Industrial Conference Board Inc., New York.

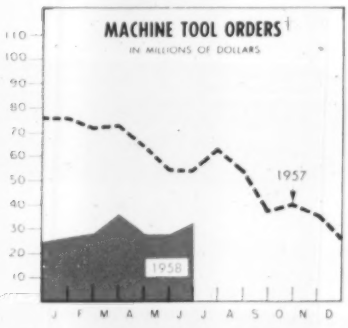
A House banking subcommittee last week approved a measure to make new homes easier to finance and to expand federal spending on slum clearance and urban renewal. An antirecession tool, it reportedly goes "far beyond" administration housing plans.

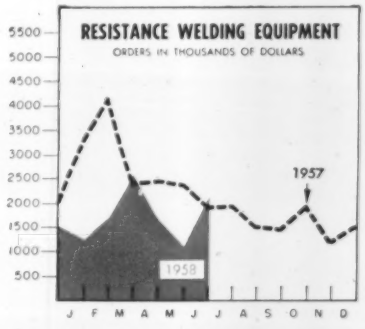
In Capital Spending — NICB points to continued declines in outlays for plant and equipment as further evidence that the recession is still felt. It's doubtful that the rate of new orders for capital equipment will improve before the end of the year.

Despite the unfavorable outlook, there's evidence that steelmakers won't sit on their hands for long. Inland Steel Co., Chicago, recently authorized capital outlays of $114 million. A portion of the $300 million recently appropriated by U. S. Steel Corp., Pittsburgh, is for expansion.

Building Sets Fast Pace

Construction continues to act as if there is no such word as recession. Contracts totaled $455.4 million for the week ended July 24, boosting the cumulative total for 30 weeks of





	New Orders		Shipments	
	1958	1957	1958	1957
Jan.	26,850	75,500	57,800	99,900
Feb.	28,300	71,900	48,050	103,350
Mar.	36,150	72,750	54,150	115,600
Apr.	28,300	64,300	50,900	110,650
May	28,050	53,650	50,100	104,300
June	32,600*	52,800	45,400*	106,950
July	.....	62,650	.....	81,450
Aug.	.....	52,900	.....	78,300
Sept.	.....	36,750	.....	82,050
Oct.	.....	39,700	.....	76,050
Nov.	.....	35,150	.....	59,750
Dec.	.....	24,850	.....	70,100
Totals	.....	642,900	.....	1,088,450

†Metalcutting and metal forming.
*Preliminary.
National Machine Tool Builders' Assn.

	Net Orders		Shipments	
	1958	1957	1958	1957
Jan.	1,243	3,310	1,422	3,161
Feb.	1,683	4,161	1,615	2,386
Mar.	2,550	2,360	1,659	2,845
Apr.	1,684	2,429	1,963	3,111
May	1,121	2,340	1,750	2,891
June	2,113	1,936	2,346	2,735
July	.....	1,943	.....	3,194
Aug.	.....	1,501	.....	2,591
Sept.	.....	1,463	.....	2,528
Oct.	.....	1,933	.....	1,953
Nov.	.....	1,167	.....	2,227
Dec.	.....	1,501	.....	1,969
Totals	.....	26,044	.....	31,591

Resistance Welder Manufacturers' Assn.

1958 to $11.8 billion. That's 7 per cent higher than corresponding 1957 period.

Contracts in June totaled more than $3.8 billion, F. W. Dodge Corp., New York, reports. That's the highest total for any single month. June contracts were 12 per cent above the previous record—set only one month earlier.

Advances in construction are reflected in higher bookings of fabricated structural steel. The American Institute of Steel Construction Inc., New York, says June bookings were the highest in 13 months. New orders reached 286,798 tons in that month, marking a gain of 60,000 tons in one month and an advance of 16 per cent in one year.

Index Moves Up

STEEL's industrial production index gained another point in the week ended July 26. Steel and electric power output, freight carloadings, and auto assemblies shared in the advance, as each firmed slightly. At a preliminary 134 (1947-49 = 100), the index isn't far below the high for this year.

Automakers will trim operations in August for model changeover, but look for improved readings in the index as production of '59s increases in early fourth quarter.

Prices Still Rise

Relief from spiraling prices is not in sight. The Labor Department reports that the consumer price index rose 0.1 per cent between May and June to 123.7 per cent of the 1947-49 average.

Ewan Clague, the department's commissioner of statistics, says some signs point to a decline of the index for seasonal reasons in August.

The wholesale index of primary market prices remained unchanged at 119.3 per cent of the 1947-49 level in the week ended July 22, 1958, the Labor Department adds. Lower prices on farm products and processed foods were offset by higher average prices of other commodities.

Trends Fore and Aft

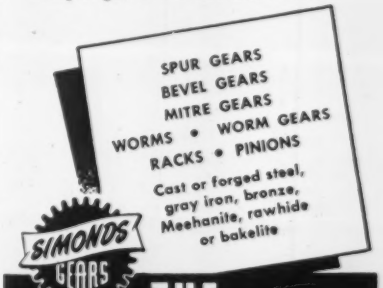
• New orders for industrial furnaces totaled $3,672,000 in June, reports the Industrial Heating Equipment Association Inc., Washington. Although volume is up substantially from the first six months' average of $3 million, it's well below the 1957 pace.

★ FINISHED GEARS
★ CUSTOM GEAR CUTTING
★ HEAT-TREATED, CASE OR FLAME-HARDENED

You are sure of quality and prompt service when you place your industrial cut gear requirements with SIMONDS GEAR. We produce the full range of sizes in the types and materials you need from your blanks or ours. Let us quote on your next gear requirements.

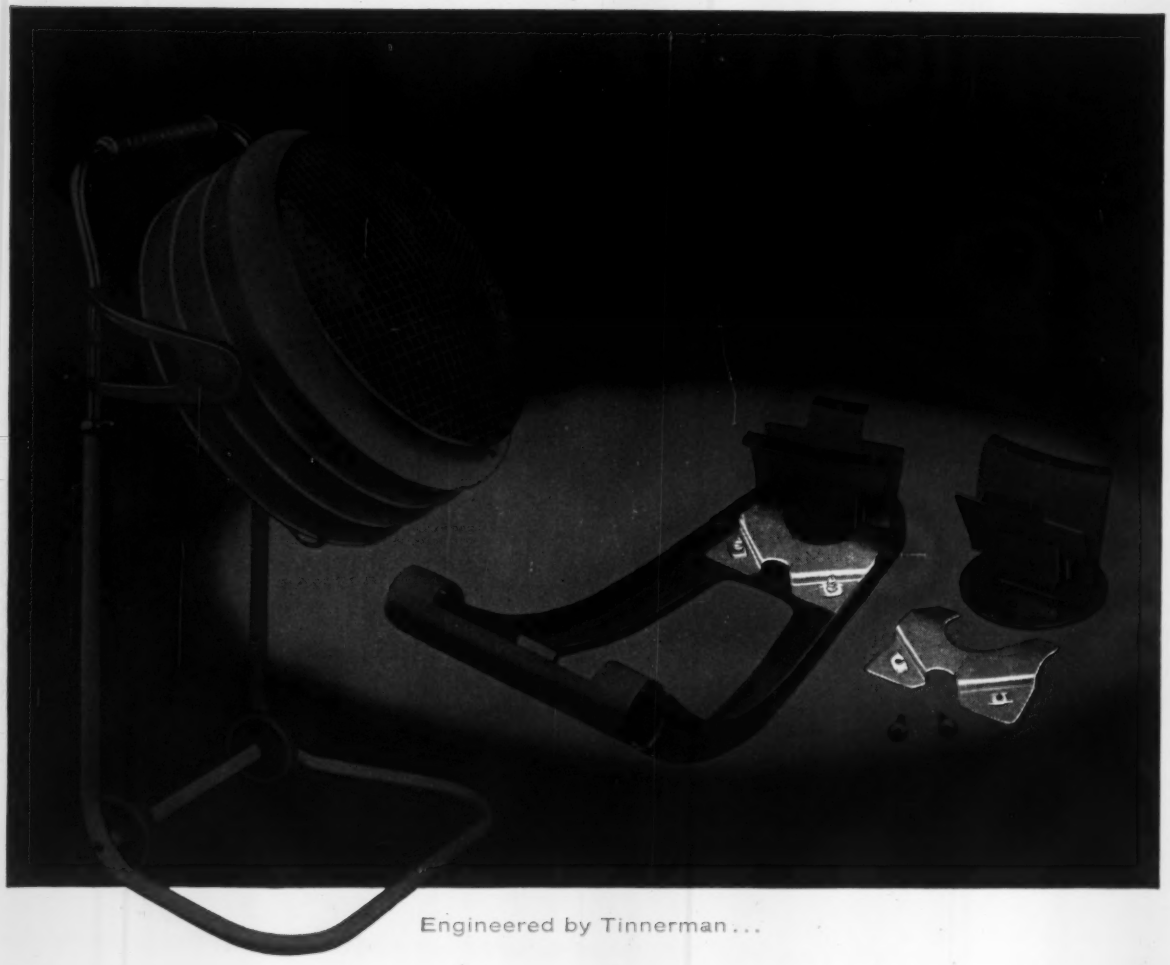
* * *

Stock carrying distributors of Ramsey Silent Chain Drives and Couplings; and industrial V-belts.



THE SIMONDS GEAR & MFG. CO.
LIBERTY at 25TH PITTSBURGH 22, PA.

Quality Gears for over 65 years



Engineered by Tinnerman...

It's a fastener...It's a friction-lock...
It's a Tinnerman **SPEED NUT**® doing double-duty

Turn this Westinghouse Mobilaire® Fan to any angle... and it *stays* angled. The Tinnerman SPEED NUT Brand Fastener that holds the fan trunnions tight to the housing also supplies live spring-tension to keep the fan positioned at any angle you choose.

These SPEED NUT fasteners, developed by joint efforts of Tinnerman and Westinghouse designers, eliminate special adjusting thumb-screws. Only 2 SPEED NUT parts serve the purpose of several stampings and ordinary fasteners. Material and assembly costs are lower than with ordinary fastening methods. And the consumer gets a better fan that's easier to adjust.

Chances are that Tinnerman designers can develop SPEED NUT parts for your product to cut costs, speed production, improve that product.

Call your local SPEED NUT representative now ... if he's not in your Yellow Pages Directory under "Fasteners", write to:

TINNERMAN PRODUCTS, INC.
Dept. 12 • P. O. Box 6688 • Cleveland 1, Ohio

TINNERMAN
Speed Nuts®

FASTEST THING IN FASTENINGS®

CANADA: Dominion Fasteners Ltd., Hamilton, Ontario. GREAT BRITAIN: Simmonds Aerocessories Ltd., Treforest, Wales. FRANCE: Simmonds S. A., 3 rue Salomon de Rothschild, Suresnes (Seine). GERMANY: Macano-Bundy GmbH, Heidelberg.

J. CARL FERGUSON
Kaiser Alum. div. sales mgr.

HAMPTON W. CAMPBELL
Lynchburg Foundry gen. mgr.

OLAV MOKLEBUST
R-N pilot plant supt.

JAMES L. WHEELER
Clearing die division mgr.

J. Carl Ferguson was made general sales manager, electrical conductor division, **Kaiser Aluminum & Chemical Corp.** **Gillette N. Houck** was made manager of promotion and technical development. The division's field engineering, marketing, and administrative departments were moved from Chicago to the electrical conductor production plant at Newark, Ohio. Mr. Ferguson and his staff remain in Chicago. **R. J. Harrison** was promoted from assistant product manager to manager of utility sales at Chicago.

Hampton W. Campbell was elected general manager, **Lynchburg Foundry Co.**, Lynchburg, Va. He was assistant general manager.

Charles E. Clark was appointed assistant superintendent of the 98-in. cold strip mill department at the Cleveland steel plant of **Republic Steel Corp.**

William R. Milliken was appointed manager of stainless bar and wire sales by **Universal-Cyclops Steel Corp.**, Bridgeville, Pa. He previously served as assistant to the manager of alloy sales, United States Steel Corp. **George C. Bush** was made general traffic manager for the company.

R. W. Brown and **R. E. Bish** were appointed manager and engineering section manager, respectively, of the fuel products section, materials manufacturing department, **Westinghouse Electric Corp.**, Pittsburgh. **J. Q. A. McClure** was named manager of manufacturing of that section.

Olav Moklebust was appointed superintendent of the pilot plant operated by **R-N Corp.** in Birmingham. He was formerly director of the Titania A/S pilot plant activities at Sokndal, Norway. R-N is jointly owned by National Lead Co. and Republic Steel Corp.

Sheffield Steel Div., Houston, Armco Steel Corp., appointed **A. C. Richards** superintendent of plate mills and special products department. He succeeds **Elmer Lynch**, who was given a special assignment by the plant manager. **Edward M. Parson** succeeds Mr. Richards as assistant superintendent of plant mills.

Robert G. Gersteneker was elected vice president and controller of **Phoenix Iron & Steel Co.**, Phoenixville, Pa., subsidiary of Barium Steel Corp.

Homer L. Shaw was named assistant supervisor of tubular research at **Youngstown Sheet & Tube Co.'s** new Youngstown tubular research laboratory. He was with Battelle Memorial Institute, where he was assistant consulting metallurgist in the ferrous division.

C. M. Lewis was named to the new post of manager, systems marketing, industrial electronic products, **Radio Corp. of America**, New York. He was manager, marketing plans, telecommunications division.

Melvin H. Creter was appointed assistant superintendent of industrial relations, **Union Drawn Steel Div.**, Republic Steel Corp., Massillon, Ohio.

James L. Wheeler was appointed general manager, die division, **Clearing Machine Corp.**, Chicago, division of U. S. Industries Inc.

Jack I. Stahl joined **Servo Corp. of America**, New Hyde Park, N. Y., as production manager, manufacturing division. He was production engineer at Fairchild Camera & Instrument Corp.

James Deshler II was elected chairman, **Minerals & Chemicals Corp. of America**, Menlo Park, N. J. The office of chairman of the executive committee, formerly filled by Mr. Deshler, has been eliminated.

John C. Hampson was appointed regional manager of the Pittsburgh office of **Pennsalt Chemicals Corp.**, industrial division. He replaces **William P. Snelsire, retired.**

Noble C. Harris was appointed to manage Washington operations of **Singer Mfg. Co.**, military products division, a new post. He was on the headquarters staff, missile systems division, Raytheon Mfg. Co.

Convair Div., San Diego, Calif., General Dynamics Corp., appointed **A. P. Higgins** assistant to the division manager-military relations; **J. H. Famme**, works manager of Plant No. 2; **W. W. Fox**, assistant chief engineer. **W. C. Keller** was appointed to Convair's general office military relations staff.

Joseph E. Harkins and **Bruce E. Dane** were named territory managers for the south-central and mideast regions, respectively, by **Alloy**

CARL D. McWADE HARRY L. WILLIAMSON JR.

join Black & Decker on special assignments

JOHN E. JACOBS WILBUR G. SMITH

appointments at Bethlehem Steel Corp.

Tube Div., Carpenter Steel Co., Union, N. J.

Carl D. McWade and **Harry L. Williamson Jr.** joined **Black & Decker Mfg. Co.**, Towson, Md. Their duties consist of special assignments connected with product planning and development. Mr. McWade was director of marketing services at Skil Corp. Mr. Williamson was with General Electric Co. as manager-marketing, Weathertron Div.

Earl K. Schafer was appointed assistant sales manager, **McGill Mfg. Co. Inc.**, bearing division, Valparaiso, Ind.

Leslie H. Gillette, western regional sales manager for Magic Door, was made manager of industrial sales for Stanley Hardware Div., **Stanley Works**, New Britain, Conn. He succeeds **James K. Buckwalter**, who resigned to become vice president-sales of Linen Thread Co. Inc.

Harvey K. Waters was named manager of the Minneapolis district office of **Whiting Corp.** He was formerly at the North Carolina district office. **Melvin J. Beagle Jr.**, formerly of Swenson Evaporator Co., division at Harvey, Ill., was transferred to the company's office in Houston.

Allis-Chalmers Mfg. Co. named **Y. S. Hogg** manager of its Tampa, Fla., district office.

Edward Meyer was appointed chief production engineer at the **American Optical Co.** plant in Buffalo. He succeeds **Kenneth L. Pursell**, named manager of the Keene, N. H., plant. Mr. Meyer was manager of lens manufacturing, Buffalo plant.

John E. Jacobs, general manager of Lackawanna, N. Y., plant, **Bethlehem Steel Co.**, was appointed assistant vice president, steel division, with headquarters in Bethlehem, Pa. He is succeeded at the Lackawanna plant by **Wilbur G. Smith**. **Robert M. Jordan**, assistant superintendent of the Lackawanna open hearth division, was made an assistant general manager.

Thomas Harris was elected vice president, **Structural Fibers Inc.**, Chardon, Ohio.

John R. Harbaugh was made manager of the new Houston district sales office of **Jessop Steel Co.**

H. E. Murray joined **Erler Pattern & Model Corp.**, Toledo, Ohio, as chief engineer, plastics products division. He was with Barrett Div., Allied Chemical Corp.

James D. Mixon was appointed field service engineer at the Process Instruments Div. office, Chicago, **Beckman Instruments Inc.**

Vincent P. Mahon, formerly sales representative in Houston, becomes branch manager at Boston for **Lunkenheimer Co.** He succeeds **Harold T. Wilbur**, retired.

R. E. Shook was appointed sales manager, pulp and paper equipment division, **Sprout, Waldron & Co. Inc.**, Muncy, Pa.

Virgil E. Urbine was named to head the customer-plant mechanics department in the Detroit area for **Electric Auto-Lite Co.**

Owatonna Tool Co., Owatonna, Minn., elected **John Mullenmaster** vice president and director of sales. Eastern sales are headed by **Robert Allyn**; western sales by **William Murray**.

Pacific Coast Foil Co., San Francisco, appointed **M. T. Schechtman** general manager.

George Steven was made manager of **Worthington Corp.'s** Buffalo plant. He succeeds **Austin C. Ross**, who retires as general manager of the plant and a vice president of Worthington.

Joseph F. Taylor was made an executive in **Maurey Mfg. Corp.'s** expanding V-drive sales division, Chicago. He was manager of V-belt sales for Goodyear Rubber Co.

I. Kirk Schlamp was made general manager, **Ravenna Metal Products Div.**, Seattle, Standard Screw Co. Formerly factory manager, he replaces **Kemp O. Hiatt**, retired.

Joseph J. Ranna was promoted to manager of the New Orleans district sales office, **A. M. Lockett & Co. Ltd.**, sales subsidiary of Babcock & Wilcox Co. He is replaced as assistant manager by **G. Michael Baccich Jr.**

Albert J. Woods was appointed Buffalo district manager covering New York State for **Latrobe Steel Co.** He is at Cheektowaga, N. Y.

Saul Padwo was made assistant to the vice president, **Yardney Electric Corp.**, New York.

Edward A. Toomey was named manager of **Yale & Towne Mfg. Co.'s** Forrest City, Ark., manufacturing plant. He succeeds **Ressler**

Seeking an answer to the squeeze on profits?

The economic outlook makes searching re-appraisal of production techniques a must these days. For in the ever-shrinking gap between selling price and cost lies the future and vitality of every business.

While the answer to cost reduction in any particular company is never simple, let's examine, for a moment, the relatively narrow problem of stamped parts production, a factor in many metalworking businesses. While the use of stampings, rather than machined or cast parts, means economy in itself, there is still a vast potential for savings in their production.

We at Wean have a unique product to sell for the production of stamped parts. It is called the "Flying Press," a name that has been adopted to describe the unusual motion of this press. We call it unique because the "Flying Press" produces stamped and formed metal parts at a rate (and low cost) hitherto unheard of in the industry: all due to its revolutionary design which eliminates clutch, brake and flywheel.

As you might presume, the "Flying Press" costs more initially than ordinary presses of the same tonnage. It costs more because it offers far greater production, versatility, and operating economies . . . and costs more to build. (We're in the same position you are, after all.) But even with this higher equipment cost to be amortized against production, the "Flying Press" produces stamped parts in the most economical way yet devised. Certainly, if you use stampings extensively in your production process, you should know more about this unusual piece of equipment.

We'd like to send you a brochure that describes the "Flying Press" and its advantages. Then, if you are interested in how it can apply to your specific production processes, we'll be glad to explore the matter further with you. We can even run your dies on a demonstration machine at our Cleveland plant. Please let us hear from you.

WEAN

WEAN EQUIPMENT CORPORATION

CLEVELAND 17, OHIO

Detroit • Chicago • Newark

STEPHEN B. ELGGREN
rejoins Bell Aircraft

PAUL L. BRUHN
Truscon Steel manager

PAUL P. POLONEC
RB&W plant supt.

JAMES G. GELDER
Diamond Power div. marketing

BURTON J. NADEN
Vascoloy-Ramet post

ROBERT J. HEISTER
Byers Pittsburgh div. mgr.

A. Dusseau, named a special assistant to the president.

James G. Gelder was appointed marketing manager, electronics division, **Diamond Power Specialty Corp.**, Lancaster, Ohio. He was sales manager, process control systems, for Philco Corp.'s government and industrial division.

Burton J. Naden was appointed to the new post of general sales manager, **Vascoloy-Ramet Corp.**, Waukegan, Ill. He was assistant manager, general products department.

James Reid was made manager, field services department, **Baker Perkins Inc.**, Saginaw, Mich. He succeeds **A. S. Wallace**, retired.

Joseph C. Schilling was elected vice president, **Standard Mfg. Corp.**, Chicago.

Northrop Aircraft Inc., Beverly Hills, Calif., elevated **Robert R. Miller** and **Thomas V. Jones** to senior vice presidents.

Robert J. Heister was appointed manager of the Pittsburgh division of **A. M. Byers Co.** He was a field service engineer.

William W. Kearney was appointed manager of manufacturing, **Baker Industrial Trucks Div.**, Otis Elevator Co., Cleveland. He was manager of production control.

Marlin Kirk was made sales manager, **Potter & Brumfield Canada Ltd.**, subsidiary of Potter & Brumfield Inc., Princeton, Ind.

Henry W. Doctor, as president, heads the newly formed **Southern Steel Service Co. Inc.** at Orlando, Fla. Mr. Doctor served Babcock & Wilcox Co. for 25 years.

R. H. Smitter was made general sales manager, **Waugh Engineering Co.**, Van Nuys, Calif.

Dr. Walter Welkowitz was made director of engineering, **Vibro-Ceramics Div.**, Gulton Industries Inc., Metuchen, N. J.

Stephen B. Elggren, a former assistant vice president, **Bell Aircraft Corp.**, Buffalo, has returned to the company in the new post of sales manager for the Niagara Frontier Div.

Paul L. Bruhn succeeds **Douglas K. Forsyth**, retired, as manager of Republic Steel Corp.'s **Truscon Steel Div.**, Youngstown. Mr. Bruhn was manager of the Berger Div. in Canton, Ohio.

Paul P. Polonec was named plant superintendent at the Rock Falls, Ill., plant of **Russell, Burdsall & Ward Bolt & Nut Co.**, Port Chester, N. Y. He was general foreman of the wire mill at the Port Chester plant.

Sidney R. McKinnon was appointed director of purchases for **McDowell Co. Inc.** and associated companies, Cleveland.

Othmar Besch was advanced to chief engineer at **Spincraft Inc.**, Milwaukee.

Grant Gear Works Inc., Boston, named **Forrest Emery** sales manager.

Lewis Marks was appointed sales manager, **Disogrin Industries Inc.**, Mt. Vernon, N. Y. He was manager, midwest division, Polymer Industries Inc.

OBITUARIES...

Alan M. Scaife, 58, chairman, **Scaife Co.**, Pittsburgh, died July 24.

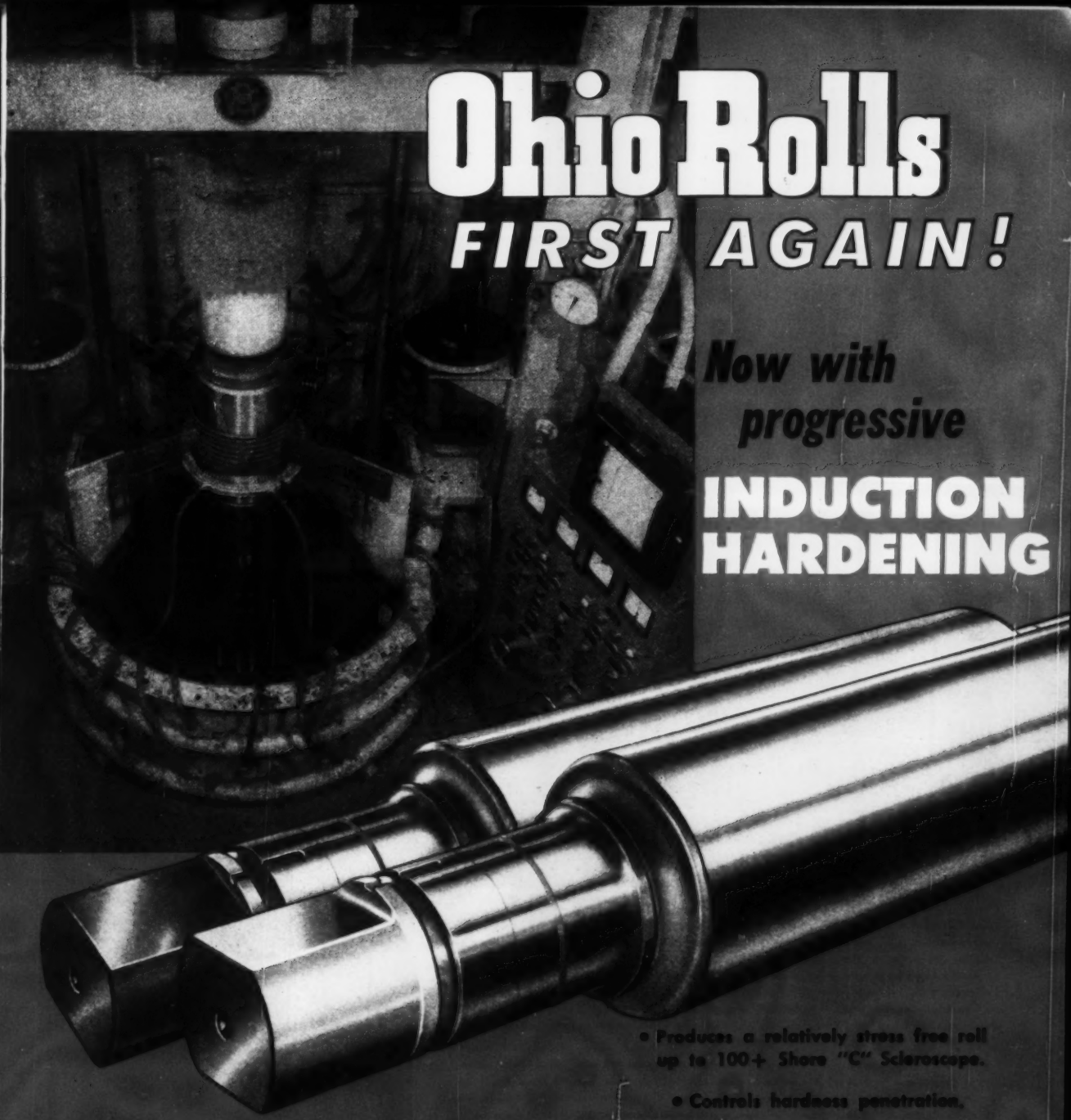
Arthur W. Hughes, 67, vice president and general manager, **Cleco Pneumatic Tool Co. of Canada**, Toronto, Ont., died July 21.

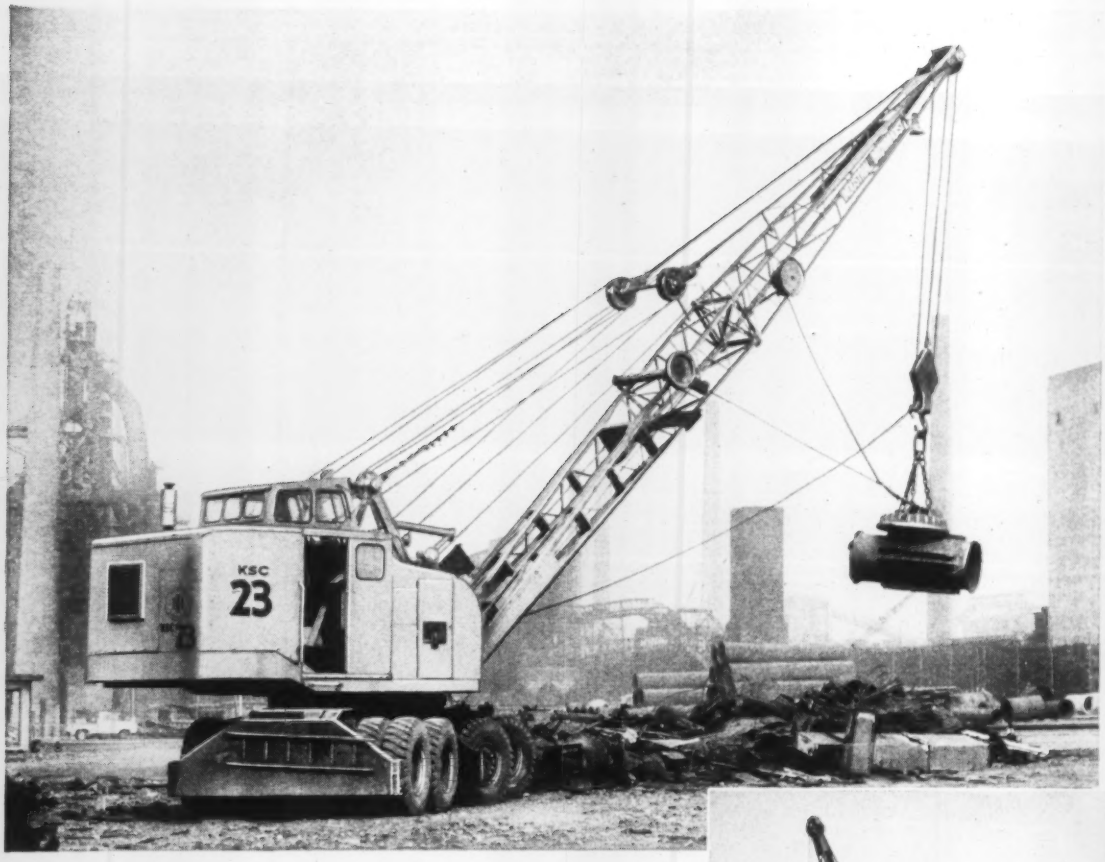
George H. Jewell, 76, recently retired vice president, **Glamorgan Pipe & Foundry Co.**, Lynchburg, Va., died July 17.

Herman J. Manzel, 85, president, **Manzel Bros. Co.**, Buffalo, died July 18.

Winfred E. Fouse, cofounder of **General Tire & Rubber Co.**, Akron, died July 23.

Fred C. Bonar, 60, manager of manufacturing operations for **Mahoning Valley Steel Corp.**, Niles, Ohio, died July 11.


Ohio Rolls
FIRST AGAIN!
Now with progressive
INDUCTION HARDENING
• Produces a relatively stress free roll up to 100+ Shore "C" Scleroscope.
• Controls hardness penetration.
• Offers superior roll performance.
• Tested and proved by nearly 3 years' actual experience.
shaping metal for all Industry
THE OHIO STEEL FOUNDRY CO.
LIMA, OHIO
Plants at Lima and Springfield, Ohio
LIMA... Virtually at the center of the steel industry
OR23
Ohio Iron and Steel Rolls: Carbon Steel Rolls—Ohioloy Rolls—Ohioloy "K" Rolls—Flintuff Rolls—Double-Pour Rolls—Chilled Iron Rolls—Denso Iron Rolls—Nickel Grain Rolls—Nioloy Rolls—Special Iron Rolls—Forged Steel Rolls



ALL PARTS ARE INTERCHANGEABLE

on Brownhoist's Diesel Electric Locomotive and Wagon Cranes

The 50 Ton Diesel Electric Wagon Crane and the 50 Ton Diesel Electric Locomotive Crane pictured here are two of several Industrial Brownhoist heavy-duty cranes operated by Kaiser Steel Co. at their huge plant in Fontana, California. Although these cranes operate at peak efficiency on a variety of rugged, daily jobs, it sometimes becomes necessary to replace parts. With Industrial Brownhoist cranes, either locomotive or wagon, part replacement is both swift and economical for every part is *interchangeable* from the car body up. The number of parts in your stock can be cut in half and down time for part replacement can be virtually eliminated.

If you need both a wagon crane and a locomotive crane for the heavy-duty jobs around your plant, get Industrial Brownhoist cranes. You, too, will benefit from the interchangeability of parts and such high performance features as exclusive 360-degree monitor-type cab, clear-vision boom, straight line power train and electric rotation for fast operation. Write for further information today.

208

BROWNHOIST

CLAMSHELL BUCKET

250 TON WRECKING CRANE

COAL-ORE BRIDGE

CAR DUMPER

LOCOMOTIVE CRANE

INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN • DISTRICT OFFICES: Cleveland, Philadelphia, Chicago, San Francisco, Montreal.

• **AGENCIES:** Detroit, Birmingham, Houston

Acquires Foundry

Consolidated Iron-Steel Mfg. Co. broadens operations in procuring Ohio Foundry Co., Cleveland

CONSOLIDATED IRON-STEEL Mfg. Co., Cleveland, has acquired Ohio Foundry Co.'s plant and equipment at 2469 E. 71st St. and its light foundry equipment at 9812 Quincy Ave., that city. The property at the latter address has been leased by Ohio Foundry Co. to Carling Brewing Co.

Consolidated will combine Ohio's light foundry operations with its Taylor & Boggis Div., Euclid, Ohio. Joseph Hanks Jr., general manager of this division, will be in charge of the new facilities.

Henry J. Trenkamp and Henry Trenkamp Jr. will become executives of the Ohio Foundry Div. which will continue operations at the 71st Street address. Officers of Consolidated Iron-Steel Mfg. are: Chairman, I. T. Kahn; president, L. S. Cawrse; vice presidents, Joseph Hanks Jr. and J. F. Maine; and secretary-treasurer, Roy J. Foster.

Consolidated's divisions are: Republic Structural Iron Works, Republic Welding & Flame Cutting Co., Taylor & Boggis Foundry Co., Ackerman Plastic Molding Co., and Cleveland Lock Works. Republic Structural Akron Service is owned by the same interests and has its own steel fabricating plant and warehouse in Akron.

Cummins Engine Builds

Cummins Engine Co. Inc., Columbus, Ind., is adding 300,000 sq ft of floor space to its plant. Cost of the new facilities, including equipment: More than $6 million. Total capital expenditures for 1958 will exceed $12 million.

Refractories Div. Expands

Construction is more than 75 per cent completed on a multimillion dollar sea water magnesia and basic refractories plant at Pascagoula, Miss. The facility of the Refractories Div., H. K. Porter Company Inc., Pittsburgh, is scheduled to start operations late this year. Products will include chrome-magnesite, magnesite-chrome, and periclase type basic brick in burned, unburned, and steel-encased bodies; and chrome and periclase specialties. Ralph Rose is manager of the basic refractories project; W. R. Shaw, plant manager; and J. G. Bartel, general superintendent.

Canadian Car Expanding

Operations of the Turcot plant of Canadian Car Co. Ltd., Cote St. Paul, Montreal, will be moved to the company's Dominion plant in Ville St. Pierre. Cost of the Dominion plant expansion: $15 million.

Enlarges Research Center

Allegheny Ludlum Steel Corp., Pittsburgh, is enlarging its laboratory research center at Brackenridge, Pa. A new metallurgical laboratory, the largest unit planned for the firm's centralized research facilities, will be completed next summer. The center will have four buildings totaling 116,000 sq ft.

New Steel Service Center

General Sheet Steel & Plate Inc., a new organization, is absorbing two steel service centers in Cleveland: Charles A. Rose Co. and General Sheet Steel Co. The plant at 3000 Lakeside Ave. will be equipped with precision plate flame cutting equipment, shears, and other machinery necessary to cut plate sketches up to 12 in. thick. Officers are: President, C. A. Rose; secretary, Myron Eckstein; vice president, Baird Tewksbury Jr.; and treasurer, M. E. Weiner. Messrs. Weiner and Tewksbury also own Coil Steel Corp. and Chesterland Steel Service Co.

New Names Announced

Controls Section of Bendix Aviation Corp., Detroit, changed its name to Industrial Controls Section. Numerical controls, including machine control units, are produced there.

Uniseal Co., Los Angeles, changed its name to Aero-Stat Co. of California. The firm makes self-sealing fasteners.

Perlick Brass Co., Milwaukee, changed its name to Perlick Co. The firm produces refrigerated cabinets, ice cube makers, bottle coolers, soft drink dispensers, and brewery fittings.

Buy Carver Foundry Inc.

Wayne American Co. and C. H. Wheeler Mfg. Co., both of Philadelphia, have acquired Carver Foundry Inc., Fairview Village (Norristown), Pa. The Carver firm, operating independently, will produce gray iron castings weighing up to 4000 lb and nonferrous castings weighing up to 2000 lb.

DeVilbiss Forms Subsidiary

DeVilbiss Co., Toledo, Ohio, organized a subsidiary, DeVilbiss Metal Fabricators Co., to provide finishing systems to industry. The new organization represents a consolidation of the Peters-Dalton Div. of Detroit Harvester Co. and Newcomb-DeVilbiss Co., producers of industrial ovens, heavy-duty water-wash spray booths, part washers, dust collectors, and a wide variety of related equipment. Headquarters will be at 17900 Ryan Rd., Detroit, Mich. Reber C. Stupp is vice president and general manager of the new company; J. W. Cornelius, vice president-engineering; and T. Kenneth McGuire, vice president-sales.

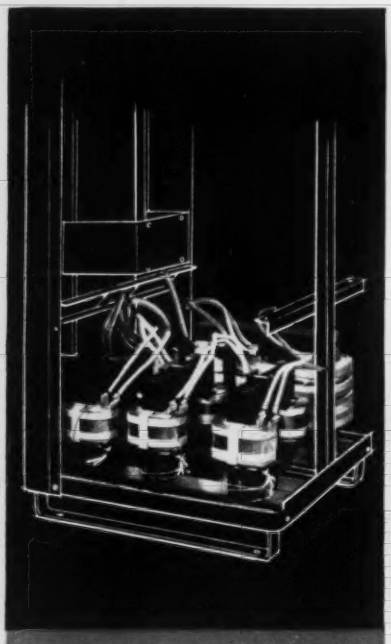
Forms Toll-Rolling Unit

To meet the demands for precision-rolled niobium (columbium) in the nuclear, electronic, missile, and aircraft industries, American Silver Co., Flushing, N. Y., has set up a special division for the toll-rolling of this metal. The firm is producing niobium strip in thicknesses as low as 0.0005 in. to tolerances as close as 0.0001 in. The firm also produces tantalum, zirconium, titanium, and other of the newer metals in precision-rolled strip and foil.

Production Steel Expands

A $5-million expansion program by Production Steel Co., Detroit, is being implemented with the launching of a subsidiary, Production Steel Products Inc. The new organization will offer a customer service program by stocking in-

(*Please turn to Page* 86)



Strip Conductor

Tubed Sheet

Automobile Grille

Product, Part, Process:

Aluminum has a remarkably consistent record of cutting production cost, maintenance costs, shipping costs and/or improving products wherever it's used.

One reason for this is the great *versatility* of this strong, lightweight metal. It continues to surprise even designers and engineers who have worked with it for years; its applications sometimes seem endless.

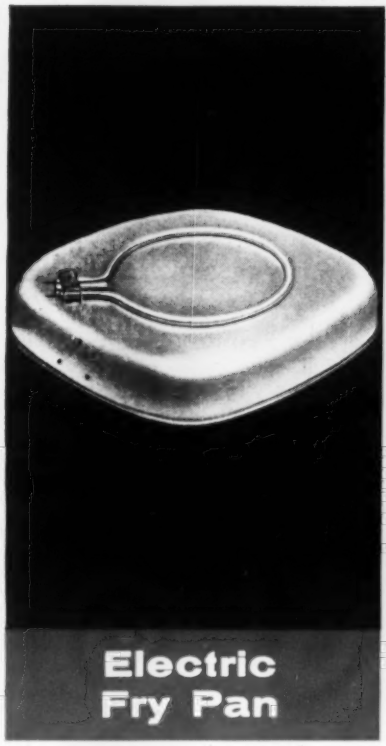
Anodized Aluminum Strip Conductor, for instance, is *self-insulating*—the anodized film is a non-conductor. And, Reynolds Aluminum Strip Conductor offers equipment designers better electrical performance, reduced weight, lower costs in electro-magnetic applications.

Aluminum Tubed Sheet is another development that improves products, cuts costs. It enables the designer to send fluids through a sheet in any pattern, any flow rate. Used for evaporators, Reynolds exclusive Tubed Sheet *one-side-flat* provides more and better storage space, easier cleaning. In addition, it does away with outside tubing, and the extra labor that it requires.

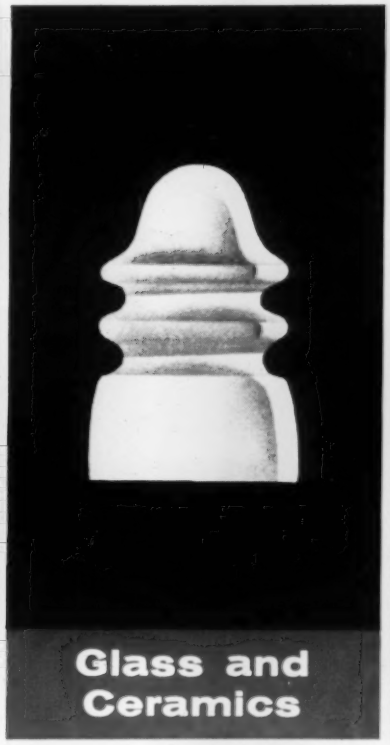
Cost-and-sales-conscious automobile men are using more aluminum every year, and one of their best uses is in automobile grilles. Aluminum grilles can be produced in a number of cost-cutting ways: extruding, roll-forming, stamping, extruding and perforating.

Aluminum, with its production flexibility, gives greater freedom to designers, as well as lower costs to manufacturers. It gives manufacturers a selling plus, too, because an aluminum grille, clear or color-anodized, won't chip, pit, peel, flake or rust.

REYNOLDS



Electric Fry Pan



Glass and Ceramics

Flexible Duct

all better, lower cost with Aluminum

Brazed-element aluminum fry pans can solve a lot of manufacturing problems. The element can be brazed to the pan body easily. With no surface porosity, the aluminum pan is easier to clean, more attractive. Brazed elements also provide faster, more even heat distribution.

Aluminum chemicals—hydrated, calcined and activated aluminas—serve many industries. Reynolds hydrates and calcines, for example, make glass and glazed ware more sparkling, ceramics more heat resistant, less breakable.

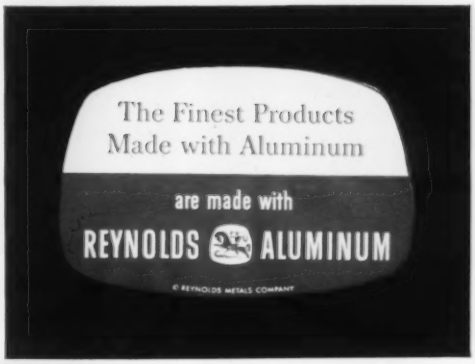
Reynolds Wrap aluminum foil is best known for its 1,001 home uses, but industry uses foil, too. For example, the walls of flexible tubing. This tubing is tough, flame resistant, and has good reflective insulation and air-flow characteristics. It is said to cut air conditioning duct installation costs up to 30%.

Take advantage of aluminum's versatility, and production flexibility. Design in aluminum for improved products, lower costs. For details on the characteristics of various aluminum alloys—or for technical assistance—contact Reynolds Design and Engineering Service through your local Reynolds office.

Reynolds Metals Company, P. O. Box 2346-JL
Richmond 18, Virginia

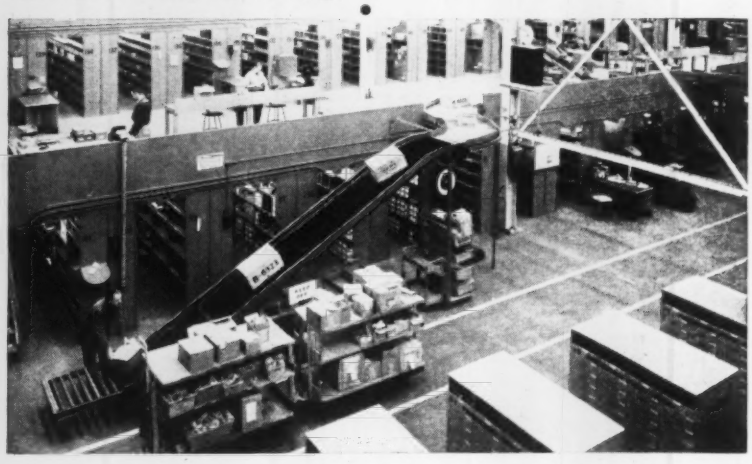
ALUMINUM

Watch Reynolds All-Family Television Program, "DISNEYLAND", ABC-TV.



Ask Standard

how to cut costs with conveyors



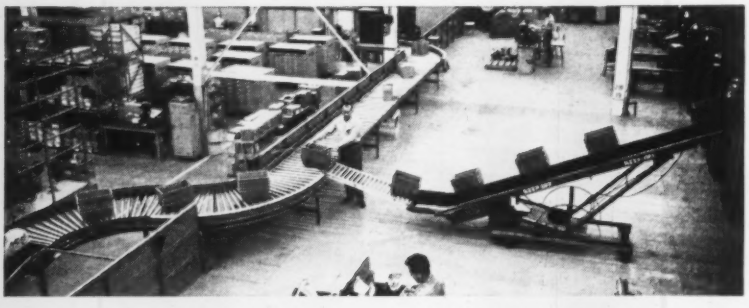
One of two Inclinebelt conveyors that carry parts to reversible live roller conveyor at second level. Belt conveyors are reversible to bring down outgoing parts. Note minimum space used for conveyors.

Multi-level conveyors help Douglas Aircraft CUT STORAGE AREA BY 2/3

When it's difficult to spread out — look up! That's what the El Segundo Division of Douglas Aircraft did when confronted with the need to triple the capacity of a parts stockroom facility.

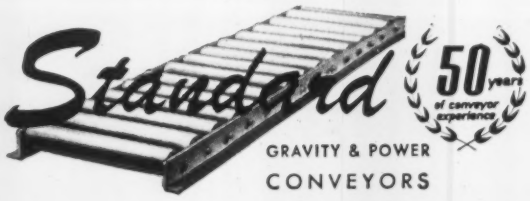
Today, instead of stocking parts on one level, they're using three. Movement of parts in and out of all three levels is quick, simple and efficient. They're doing it with Standard conveyors.

This relatively simple solution to what could have been a difficult problem is one example of how Standard Conveyors pay off in every industry. STANDARD CONVEYOR COMPANY, North St. Paul 9, Minnesota. Sales and Service in Principal Cities.



Third level is reached via portable Handibelt conveyor from reversible live roller conveyor. Patented easy-adjustment features of Handibelt permit quick reversing of flow.

For details on Standard Conveyors, help in selecting the right type and size to meet your needs, contact the Standard representative listed in your classified phone book or write direct. Ask for Bulletin Y-8.



(*Concluded from Page* 83)

ventories of hot-rolled bars and shapes, cold-finished bars, structurals, plates, galvanized and stainless steel, aluminum, and other specialty items.

NEW OFFICES

Aluminum Co. of America, Pittsburgh, opened a sales office at 1001 Franklin Ave., Garden City, N. Y. William B. Renner is manager.

Raytheon Mfg. Co. moved the administrative and sales offices of its Semiconductor Div. to Needham (Mass.) Industrial Park, off Route 128. Production facilities remain in Newton, Mass. The division manager is H. J. Finison.

Thompson Products Inc., Cleveland, opened an office in the National Grange Bldg., Lafayette Square, Washington, D. C. Frank A. Flower is manager; Arthur R. Christie, senior consultant.

ASSOCIATIONS

National Fluid Power Association, Evanston, Ill., elected these officers: President, J. A. Marsh, Rivett Lathe & Grinder Inc., Boston; first vice president, L. L. Charlson, Char-Lynn Co., Minneapolis; second vice president, Frank Flick, Flick-Reedy Corp., Melrose Park, Ill.

Steel Door Institute, Cleveland, elected Nat L. Lehman board chairman. Mr. Lehman is vice president-sales promotion for Steelcraft Mfg. Co., Cincinnati.

British Investment Casters' Technical Association has been established at 5 E. Bank Rd., Sheffield 2, England. J. Bolton is secretary.

George H. Peckover, Peckover's Ltd., Toronto, Ont., has been named president of the recently formed **Canadian Steel Warehouse Association,** 11 Adelaide St. W., that city. Other officers, all of Toronto, are: Vice presidents, Archie Russel of Hugh Russel & Sons Ltd. and Ernie Samuel of Samuel, Son & Co. Ltd.; treasurer, Paul Davidson, Rosco

DON'T BE PENNY-WISE AND POUND-FOOLISH! Some silicon products are cheaper than others, but the one that *seems* cheapest may not be the best for your particular application . . . and can often cost you more in the long run. Silicon has so *many* uses as an alloying element that it is not always easy to select the silicon product that will give you best results . . . at the lowest *final* cost.

Because VCA produces a complete line of silicon products, no one is more qualified than your VCA representative to give you an *impartial* recommendation of those best suited to your applications. Just call your nearest VCA District Office.

Producers of alloys, metals and chemicals

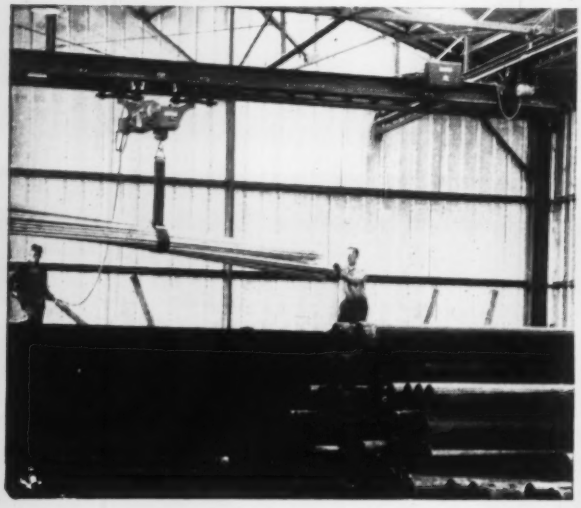
VANADIUM CORPORATION OF AMERICA

420 Lexington Avenue, New York 17, N. Y. • Chicago • Cleveland • Detroit • Pittsburgh

Tramrail Crane
CUTS PIPE HANDLING COST 40%

▲ Unloading a railroad car inside the warehouse.

Loading a bundle of pipe directly from railroad car onto a truck for local delivery. ▼



CRANE-O'FALLON CO., Denver, branch of the Crane Co., a large plumbing, heating equipment, valve and fitting manufacturer, installed a Cleveland Tramrail crane for handling pipe out of railroad cars into trucks for immediate delivery or into storage. The crane so speeded the work that now a 100,000 lb. car can be handled for what it formerly cost to unload a 60,000 lb. car.

The crane is of two ton capacity and has a motor-driven bridge and hoist. The carrier is hand-propelled because it rolls free and easy and normally is only traveled a few feet.

The Crane-O'Fallon installation is typical of the great savings that are being made by Cleveland Tramrail cranes and overhead materials handling systems.

WRITE FOR FREE COPY of Engineering and Data Booklet No. 2008. Packed with valuable information. Profusely illustrated.

CLEVELAND TRAMRAIL

Overhead Materials Handling Equipment

CLEVELAND TRAMRAIL DIVISION • THE CLEVELAND CRANE & ENGINEERING CO. • 7829 E. 290 ST. • WICKLIFFE, OHIO

Metal & Roofing Products Ltd.; and secretary, Robert Baines, Baines & David Ltd.

F. Stan Romanse, Babcock & Wilcox Co., New York, was elected president of the **Purchasing Agents Association of New York Inc.**

CONSOLIDATIONS

National Tool Co., Cleveland, manufacturer of special cutting tools, acquired **Auto-Vac Co.**, Bridgeport, Conn., producer of automatic machines for vacuum forming plastics. E. Bowman Stratton Jr. has been named vice president of National Tool in charge of the Auto-Vac Div.

Wheelabrator Corp., Mishawaka, Ind., acquired **Crandall Engineering & Mfg. Inc.**, Vicksburg, Mich., producer of barrel finishing machines. J. A. Schmidt Jr. will be general manager of the new division; G. H. Lieser, wet blast product manager; and Roy T. Romine, barrel finishing product manager and chief engineer.

H & B American Machine Co. Inc., Chicago, acquired control of **General Trading Co.** and its 42 wholesale branches. General Trading is a distributor of automotive parts and accessories, industrial supplies, heavy hardware, and steel products.

Cleveland Pneumatic Industries Inc., Cleveland, acquired **Claud S. Gordon Co.**, Richmond, Ill., manufacturer of supplies in the heat treat and heat measurement fields.

Houdaille Industries Inc., Buffalo, purchased **Provincial Engineering Ltd.**, Niagara Falls, Ont., producer of overhead material handling and power transmission equipment, and erector of manufacturing plants.

J. I. Case International S. A., a subsidiary of J. I. Case Co., Racine, Wis., acquired the majority stock interest in **Societe Francaise Vierzon**, farm equipment manufacturer.

McGraw-Edison Co., Chicago, has offered to acquire National Electric Coil Co., Columbus, Ohio, fabrica-

There's a Satisfied Customer back of most orders for

Diamond Perforated Metals

Naturally, we're always glad to make new friends and open up new accounts but, more and more as time goes on, the greater part of our business comes from concerns that have dealt with us before—some of them for nearly half a century.

One Reason is because they have learned that Diamond Perforated Metal Products are always reliable and our charges in line with competition of comparable quality. Another Reason is because our facilities are so complete, and our stock of dies so extensive, that almost any demand for perforated metal sheets, plates or parts can be taken care of promptly, accurately and economically.

ALL inquiries receive prompt attention. Illustrated catalogs give helpful working data—show many modern applications—enable you to select the best pattern for any purpose.

DIAMOND MANUFACTURING CO., WYOMING (Wilkes-Barre Area) **PENNA.**

New Bulletin No. 47, describes DIAMONTEX Perforated Metal Lay-in Panels for Modern Acoustical Ceilings.

***SAND BLAST* the easy RUEMELIN way!**

A practical Sand Blast Generator for all types of outdoor cleaning work. Removes rust scale, paint. Cleans bridges, removes laitence from cement. Cleans ready-mix trucks and highway equipment prior to re-painting. Equipped with remote control with deadman valve for stop and start *at the nozzle!* Wet type nozzles also available if desired. Portable units can be equipped with hi-speed mountings for highway trailing. Write for descriptive bulletin.

RUEMELIN MFG. CO.

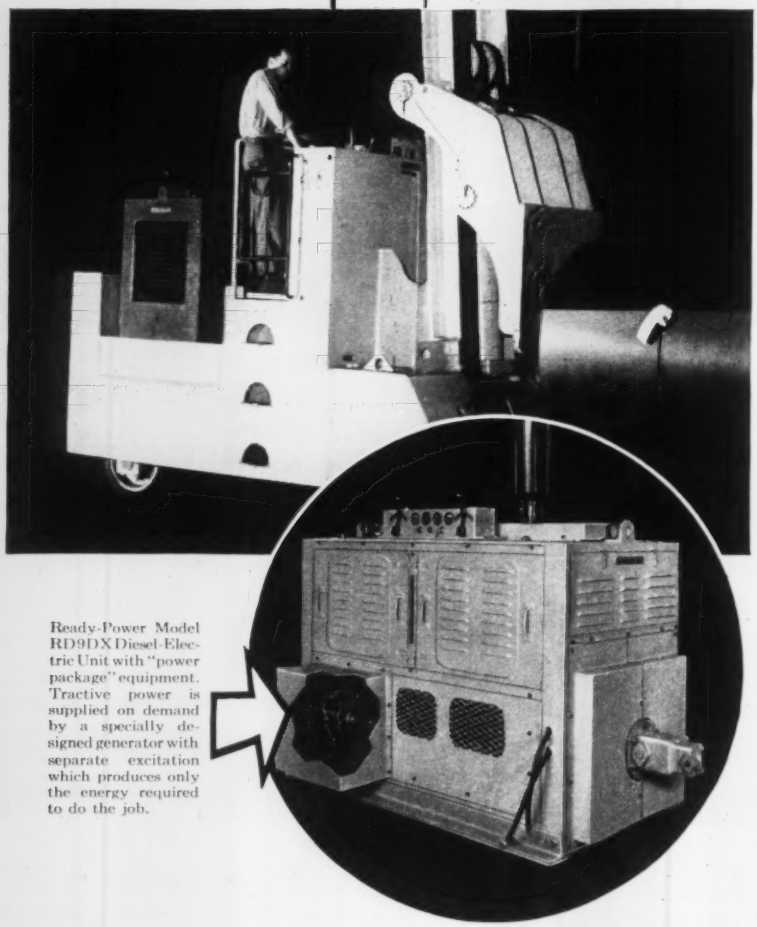
MFRS. & ENGRS. • SAND BLAST & DUST COLLECTING EQUIPMENT
3882 NORTH PALMER STREET • MILWAUKEE 12, WISCONSIN, U. S. A.

A8-9403-1/3

New Diesel-Electric "Power-Package" Does Both Jobs Economically

1 GENERATES TRUCK MOTIVE POWER

2 DIRECT-DRIVES HYDRAULIC PUMP



Ready-Power Model RD9DX Diesel-Electric Unit with "power package" equipment. Tractive power is supplied on demand by a specially designed generator with separate excitation which produces only the energy required to do the job.

Ready-Power makes diesel-electric power doubly effective with a newly developed "power package" designed specifically for use with its "RD" Series Power Units. This remarkable new concept allows the unit to operate at *constant speed*, no load to full load, yet supplies full range of tractive power on demand and produces continuous hydraulic power without need for intermediate electric motors. The last word in simplicity, this new "power package" eliminates contactor failure, minimizes maintenance, assures maximum operating economy for electric trucks up to 200,000 lb. capacities. Write for complete information.

READY-POWER

The READY-POWER Co., 3824 GRAND RIVER AVE., DETROIT 8, MICH.

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electic Power Units for Industrial Trucks

tor of copper wire and insulating materials used in making electrical windings. The proposal is subject to approval by National Electric stockholders.

NEW ADDRESSES

Jones & Laughlin Steel Corp., Pittsburgh, moved its district sales office to 2131 S. Garfield Ave., Los Angeles 22, Calif. Its Stainless & Strip Div. is also quartered at that address.

American Railway Car Institute changed its address to 200 E. 42nd St., New York 17, N. Y.

U. S. Steel Export Co., a subsidiary of U. S. Steel Corp., moved its general offices to 100 Church St., New York.

Detroit Harvester Co. moved to its new office building and research center in Oak Park, Mich. The structure provides for executive offices and engineering facilities (housed separately in Detroit), as well as new testing and research laboratories.

Nonferrous Div., Frank Samuel & Co. Inc., moved to 500 Fifth Ave., New York 36, N. Y. The firm's ore and tin departments will remain at 24 State St., New York 4, N. Y.

Rowe Machinery & Mfg. Co. moved into its new plant and offices at 811 Regal Row, Dallas, Tex. The firm makes coil handling equipment for the metal fabrication industry.

Long-Lok Corp. moved to 2601 Colorado Ave., Santa Monica, Calif. The firm makes self-locking, self-sealing bolts and screws.

International Selling Corp. and its subsidiary, International Steel Depot Inc., New York, moved into new branch offices and warehouse at 10220 Katy Rd., Houston, Tex. Stocks include imported steel, nonferrous metals, chemicals, and plastics.

Wiedemann Machine Co. moved its plant to King of Prussia, Pa. The firm makes turret punch presses and

Sensational Blitzhacker gets its edge from

SHARON STAINLESS

Here's something new in food choppers. It cuts its way through more food faster than you can pronounce its name—*Blitzhacker.*

One of the more amazing things about the Blitzhacker is its blade, an accordion of Sharon Stainless Steel with a cutting edge *shaved* on. A special shaving process develops a durable edge that will stay sharp years on end without chipping.

When you have a problem or an idea where Stainless Steel could be involved, call the Sharon office nearest you for service.

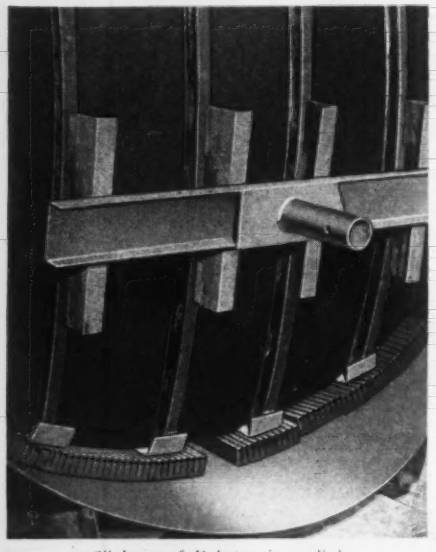
SHARONSTEEL

SHARON STEEL CORP.

SHARON, PENNSYLVANIA

CHICAGO • CINCINNATI • CLEVELAND • DAYTON • DETROIT • GRAND RAPIDS • INDIANAPOLIS • LOS ANGELES • MILWAUKEE
NEW YORK • PHILADELPHIA • ROCHESTER • SHARON • SEATTLE • SAN FRANCISCO • WASHINGTON, D. C. • TORONTO • MONTREAL

Rubatex provides "built-in" temperature control—sanitation—additional payload!



2" layer of Rubatex is applied between inner and outer shells of stainless steel milk tank. Rubatex is applied to inner shell with an adhesive between steel ring stiffeners used around inner tank. Thin layer of Rubatex also used over ring stiffeners—eliminating metal to metal contact. Outer shell is then wrapped around the Rubatex.

Rubatex answers need for careful temperature control in transporting milk as it has lowest heat conductivity (K Factor 0.21) of any known structural material and maintains its insulating efficiency indefinitely.

Rubatex's closed cellular structure also eliminates any possibility of bacterial growth between shells of tank—an important feature in handling liquid foods of any kind.

Last—by no means least—Rubatex's light weight helps give Standard Steel Works one of the lightest farm pick-up tanks on road today—providing owner with an additional payload on his choice of truck.

In Standard Steel Works' own words: "After considerable investigation, we found Rubatex was the best low temperature insulation available anywhere."

Insulation efficiency, moisture and vermin proof qualities—plus extreme light weight—determined choice of Rubatex Insulation Hardboard as insulation for Standard Steel Works' 1700 gallon "Payloader" farm bulk pick-up tank.

RUBATEX
INSULATION HARDBOARD

RUBATEX DIVISION, Dept. S-8
GREAT AMERICAN INDUSTRIES, INC.
Bedford, Virginia

PIONEER MANUFACTURER OF CLOSED CELLULAR RUBBER

For full details and sample of Rubatex Insulation Hardboard—print your name in space below, attach to your company letterhead and mail to us.

Name _____

Send for Free Sample and full details

special machinery and offers heat treating services.

International Resistance Co., Philadelphia, moved its Chicago sales office to 5243 W. Diversey Ave.

NEW PLANTS

Topp Mfg. Co., a division of Topp Industries Inc., Los Angeles, opened Plant No. 5 at 10200 Aviation Blvd., that city. Plant floor space of the company has been doubled by the acquisition of this facility which houses the Communications Div. Peter H. Stanton, vice president, is in charge of the division.

KW-Dart Truck Co. is erecting a 112,000 sq ft building in Kansas City, Mo., to house general offices and manufacturing departments. Cost of the facility and its equipment: More than $1 million.

Reynolds Metals Co., Richmond, Va., will build an office and steel service center building on Fern Valley Road, Louisville. It will be operated as a branch by its subsidiary, Reynolds Aluminum Supply Co.

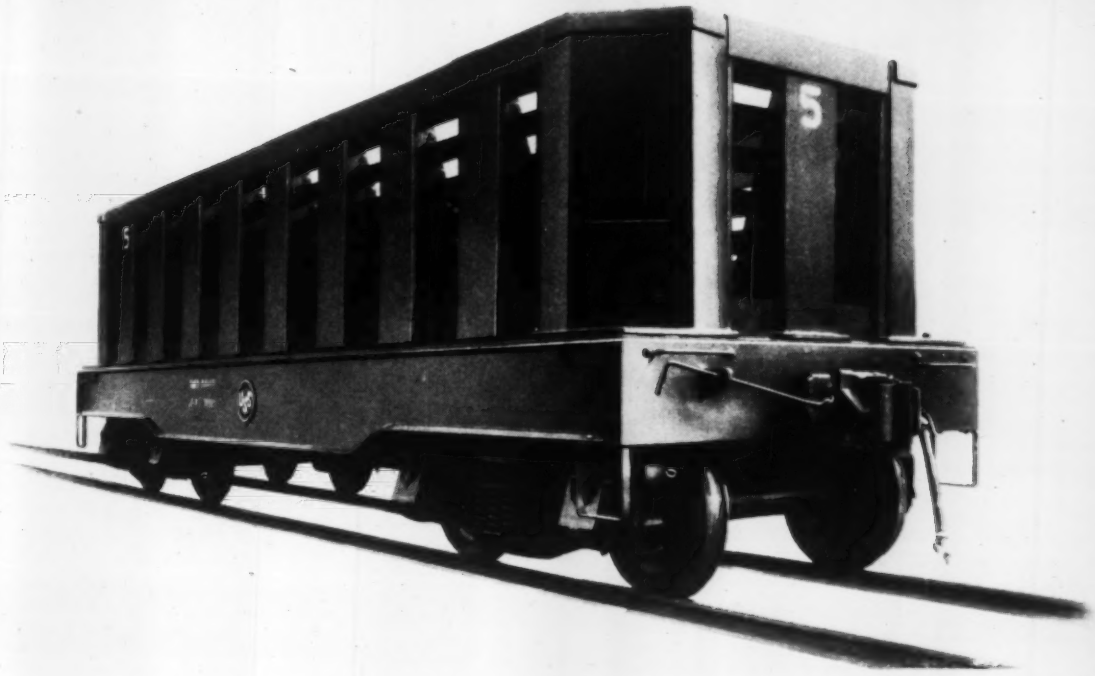
Westinghouse Electric Corp., Pittsburgh, is building a plant at Baldwin, Fla. It will be operated by the Mfg. & Repair Div.

Page-Hersey Tubes Ltd., Toronto, Ont., opened a steel service center in Montreal, Que. A similar facility was opened earlier on the Annacis Industrial Estate near Vancouver, B. C.

Owatonna Tool Co., Owatonna, Minn., opened a steel service center at 1923 Indiana Ave., Chicago 16, Ill.

Columbia - Southern Chemical Corp., Pittsburgh, is constructing a cement plant at Barberton, Ohio. Annual capacity: 1.5 million bbl.

Airfloor Co. of California Inc., Norwalk, Calif., is establishing a metal stamping affiliate (Airflow Co. of P. R. Inc.) in San Juan, P. R. The plant will market its hollow steel forms (for use in construction) in the U. S. as well as in Puerto Rico.



Crop Cars—built to last by a company that uses them

Though it may appear to belong in a stockyard, this unusual-looking car is for transporting cropped ends of hot steel billets from the shear line to the scrap yard. One of 24 such cars recently built for U. S. Steel's Gary Works, it is typical of the many special-purpose industrial cars turned out daily at the Johnstown Works of United States Steel.

Fabricated from all-rolled steel, the body of this Crop Car has open sides and ends to facilitate cooling of the hot billet ends so they can be picked up by an electromagnet. 30′ long over the end sills, 9′4″ wide, and 9′ high, it is fitted with standard A.A.R. Type 100-ton trucks and multiple-wear wheels.

The side posts are fabricated from 33″-wide flange beams, and the drop-center sills from 30″-wide flange beams. The floor is $\frac{3}{4}$″ plate overlaid with railroad rails and built up on all sides to retain several inches of slag to absorb impact and withstand high temperatures. Inclined retaining bars inside the car are notched to accommodate rows of replaceable 5″ x 1$\frac{1}{2}$″ bars running the length and width of the car.

Built for rugged service, this car weighs 57 tons unladen and will easily carry 100 tons. Special modifications are available to meet users' requirements. Our engineers will be pleased to call at your convenience to discuss your requirements for industrial cars. Meanwhile, send for a free copy of our 32-page illustrated booklet—"USS CUSTOM DESIGNED CARS."

USS is a registered trademark

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Export Company

USS United States Steel

CALCIUM-SILICON
CALCIUM-MANGANESE-SILICON

. . . they have proved to be highly versatile and are widely used in quality wrought and cast steel and high strength cast iron.

Many producers use calcium silicon to make cleaner wrought steel. Its primary function is to deoxidize and degasify — the low melting deoxidation products formed readily free themselves from the metal. Particularly effective in controlling type and distribution of inclusions in bearing and aircraft quality steels, calcium silicon also improves hot workability of stainless steel.

In steel castings calcium silicon improves physical properties by minimizing the tendency to form undesirable Type II inclusions. (Some foundrymen prefer to use calcium-manganese-silicon for this purpose — this more dilute alloy is less reactive and forms even lower melting point deoxidation products.)

For high strength iron castings calcium silicon is an effective inoculant. It is frequently used as a ladle addition to low carbon equivalent iron. For certain ductile irons specifying low silicon content, calcium silicon is sometimes used as the inoculant due to its lower silicon content.

We maintain adequate stocks of lump and crushed sizes for furnace and ladle additions. Your order will be shipped promptly.

Ohio Ferro-Alloys Corporation
Canton, Ohio

SALES OFFICES

Birmingham • Chicago • Detroit
Los Angeles • Philadelphia
Pittsburgh • San Francisco • Seattle
Denver • Kansas City • Minneapolis

STEEL

August 4, 1958

Technical Outlook

ORE SEPARATION—Dings Magnetic Separator Co., Milwaukee, will try an electrostatic device called a Coronatron for beneficiation of nonmagnetic taconite ore. It has been used successfully in other mineral concentration efforts.

ALUMINUM IN YOUR FUTURE—Imaginative manufacturers are developing more uses for the metal. Some of the newest ones: Protective coatings for mothballing U. S. Navy vessels that have wooden decks; hot water heater shells; an electrically heated charcoal and fireplace log igniter; lunch buckets; boat trailers; and a midget automobile for the golf course, farm, or beach. For the weekend boating enthusiast, there's a portable pier kit that is easy to install or remove.

WHERE WEIGHT SAVING PAYS— New armored vehicles designed for air transport make extensive use of aluminum alloy 5083 in thick plate sections, the powerplant, and a number of components. Three preproduction models are being built for the Army by Food Machinery & Chemical Corp., San Jose, Calif.

TUBES FOR CORROSIVE USE— Porcelain enameling has solved another corrosion problem. Enameled parts used for air preheater tubes have been in service five years and are in good condition, reports an eastern electric power producer. The corrosive action of sulfur compounds destroys regular tubes in two years.

DOUBLE INSURANCE—Each of the 48 air valves in the new seamless tube mill at the Indiana Harbor Works of Youngstown Sheet & Tube Co. has a standby double. If something goes wrong, it's ready for immediate substitution to cut maintenance downtime.

ALLOY HELPS FRESHEN WATER— Hastelloy C is a key material in a new ion transfer process for making brackish water drinkable. It's used as the cathode sheet material in electric membrane demineralizers that can be built to produce from 720 to several million gallons of fresh water a day. Alloy C is used because it withstands attack from the acids and salts in the undrinkable water. The demineralizers were developed by Ionics Inc., Cambridge, Mass.

CLADDING PROTECTS WIRE—Operating temperatures of electrical apparatus can be increased by using a copper wire clad with chrome-iron alloy, says Sylvania Electric Products Inc., New York. The wire is made by inserting a copper rod into the alloy tube and forming a physical bond by cold drawing and annealing. Biggest application: Resistance furnaces that operate under corrosive and oxidizing conditions.

READING DATA FASTER— A tape reader that operates at 1000 characters a second will speed data processing in computer systems. It is made by Burroughs Corp., Pasadena, Calif. Reels hold tapes of 350 or 700 ft, containing 40,000 to 80,000 characters.

NEW TUMBLING MEDIUM—A sintered abrasive medium is impregnated with auxiliary cutting, polishing, or finishing compounds to improve cutting action. Three of 11 types announced by Dixon Sintaloy Inc., Stamford, Conn., have "file-type" cutting edges on all surfaces.

WEAR HISTORY—Plastic replicas are being used at Battelle Memorial Institute to study wear in places such as cylinder walls where direct observation is difficult. The technique is similar to that used for observation under the electron microscope. A sheet of cellulose acetate dipped in dioxane is pressed against the wearing surface to make the replica. Gold is evaporated on the plastic, after which it is observed under a light microscope. A full wear history can be preserved this way.

HEAVY HEADING—The 1¼-in. Boltmaker at Cleveland Cap Screw Co., Cleveland, is cold heading 4-lb precision cap screws at the rate of 40 a minute. The machine can handle specials in an equally husky size.

Metalworking Outlook—Page 49 Market Outlook—Page 119

How We Beat the Cost Crisis:

Flexibility Pays Off on Short Lots

Automatic indexing on a modified standard machine turns out complex internal shapes at a profit. It's this company's example of how you can boost operating efficiency and trim expenses through aggressive patrolling of production costs. The article is one of the top entries in the Cost Crisis Competition. Watch for another next week

LOW PRODUCTION can be a major deterrent to cost cutting. The best tooling or method for turning out a part often is impractical because limited numbers of similar parts can't return the required investment.

A case in point: The manufacture of special service and maintenance tools and equipment. At B. K. Sweeney Mfg. Co., Denver, such tools are produced for the aircraft, railroad, and trucking industries.

Douglas Williams, tool engineer, explains it this way: In all but a few cases, the tools are made in small quantities, sometimes as few as ten similar units to a lot.

The Problem—The most important cost barrier is in producing the internal splines, squares, and hexagonal shapes. The operation was slow and costly.

The relatively high initial cost of broaches precluded their use on so few parts. And many of the internal shapes must be cut to shoulders, or into blind holes. Through broaching is impossible.

The job used to be done on a Fellows gear shaper, using indexing heads, and indexing fixtures when possible. Hand indexing was used on others. In all cases, the operator had to work at the machine all the time. Accuracy was a constant problem, since indexing errors were tough to prevent.

The Solution — New, versatile equipment (a modified Fellows gear shaper with automatic indexing) handles the jobs. Unit costs have been reduced more than 50 per cent in most cases.

The tooling for the job is simplified; tool costs are down; and the operator is needed only to load and unload the machine.

EXAMPLES...

Saved: 66%

Saved: 64%

Saved: 59%

These typical internal shapes are machined at an average savings of 63%

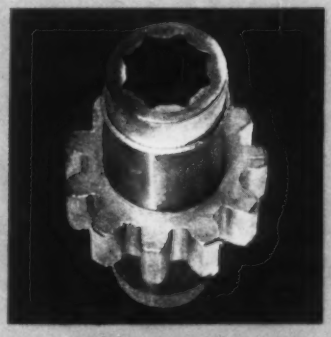
1. DOUBLE SQUARE

¾ in. across flats-cut to a relief groove

Production Quantity . . . . . 100 parts

Old method unit costs $0.549

New method unit costs $0.188



2. ANCHOR PLATE

16 straight side splines, 3⅛ in. major diameter

Production Quantity . . . . . 75 parts

Old method unit costs $1.498

New method unit costs $0.541

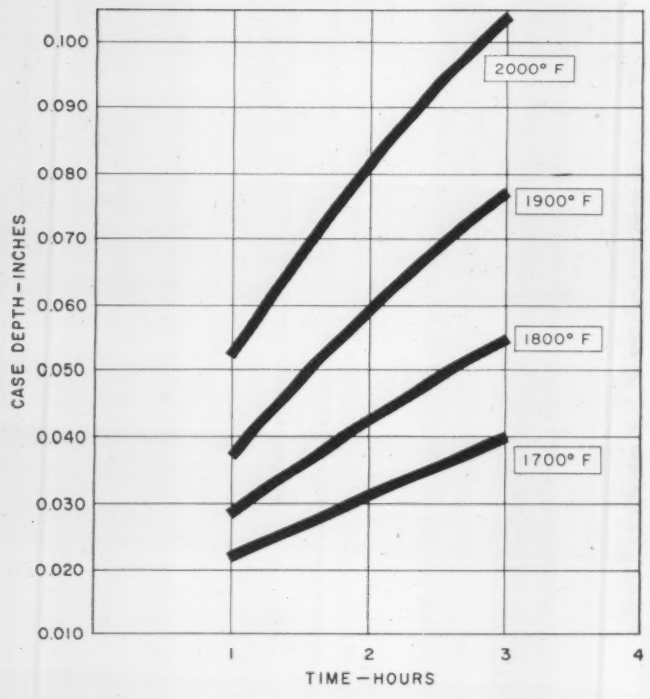
3. HEXAGONAL SOCKET

2¼ in. across flats-cut to a relief groove

Production Quantity . . . . . 20 parts

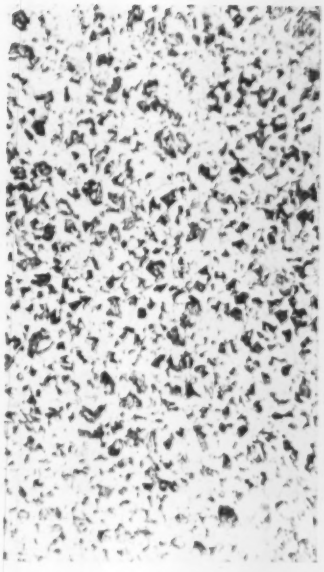
Old method unit costs $0.738

New method unit costs $0.303



Total case depths on 8620 steel for time at temperature

Picture of Core



8620 steel before high temperature carburizing.

High Temperature Carburizing

Where you can use it, the process will increase production and decrease costs. Many of our carburizing steels are suitable for treatment at higher temperatures

STEP UP your furnace temperature to 1900° F and you may be able to cut carburizing time in half. Go to 2000° F, and you can chop it still more.

Those are conclusions drawn from an investigation into high temperature carburizing at Ipsen Industries Inc., Rockford, Ill. Satisfactory grain size can be maintained when processing the higher nickel alloy steels, such as 4615 and 9315. Alloys such as 8620 may require refinement in a reheat operation.

H. N. Ipsen, president of the company, feels that while general acceptance of gas carburizing at the higher temperatures is unlikely (because dimensional limits and physical requirements of a part may be too critical), it will prove adaptable in many cases. "The savings in production costs and time in those cases will certainly warrant the required preliminary investigation," avows Mr. Ipsen.

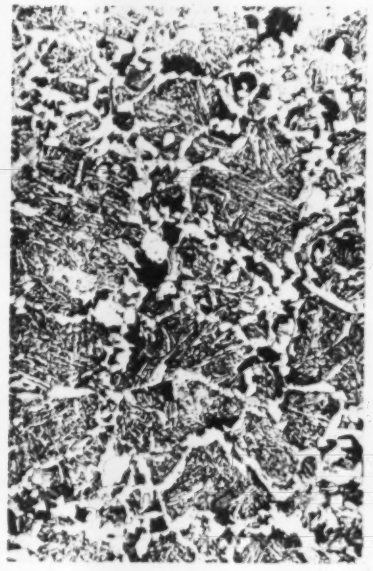
Requires Closer Control—Atmosphere potential becomes more critical at elevated temperature and creates a need for automatic dew point control at the furnace as well as at the generator.

Temperature uniformity is also more critical at the higher levels because accelerated carbon penetration exaggerates discrepancies of temperature differences in the equipment.

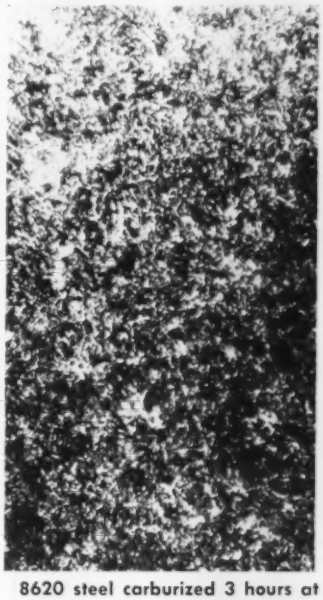
To Begin the Job—Two needs must be met before high temperature carburizing can be done. 1. Commercially available standard steels which are "adequate." Their analysis must make them suitable

through Carburizing and Reheat

All photos: X100—2 per cent Nital etch



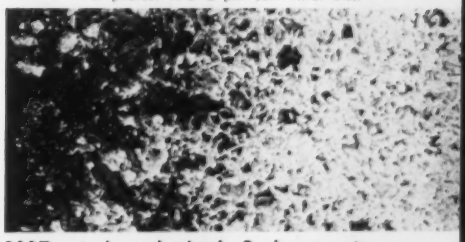
8620 steel carburized 3 hours at 2000° F and atmosphere cooled



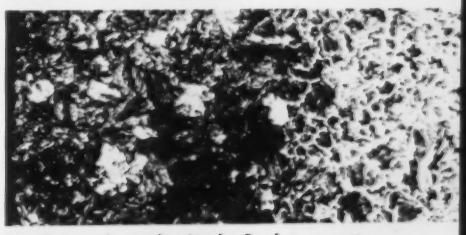
8620 steel carburized 3 hours at 2000° F, cooled, reheated to 500° F, and oil quenched

High Temperatures Increase Penetration of Carbon

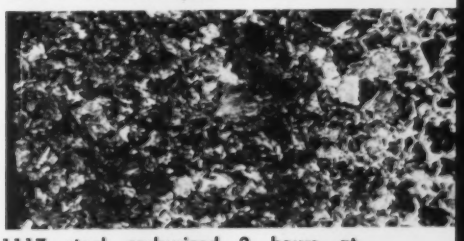
All photos: X75—2 per cent Nital etch



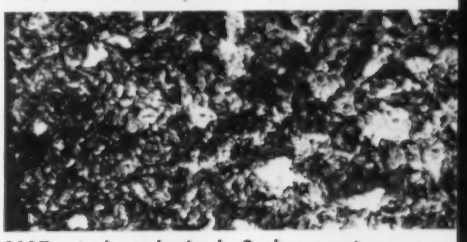
1117 steel carburized 2 hours at 1700° F and atmosphere cooled.



1117 steel carburized 2 hours at 1800° F and atmosphere cooled



1117 steel carburized 2 hours at 1900° F and atmosphere cooled



1117 steel carburized 2 hours at 2000° F and atmosphere cooled.

Is Practical

for carburizing at the higher temperatures without excessive grain growth. 2. Practical gas carburizing furnaces that can operate at elevated temperatures and under exaggerated conditions of enriched endothermic atmospheres.

Steel suppliers believe many of our present carburizing steels are suitable for treatment at higher than normal temperatures. They say they can supply test control procedures to assure specific grain sizes. Producers also indicate that additional semistandard grades with inherent resistance to coarsening are in development.

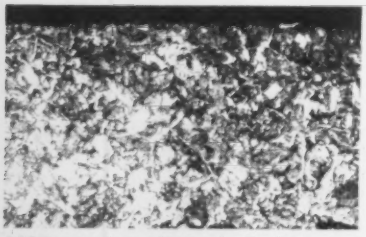
Furnaces Are Ready—Ipsen In-

How Temperature Affects Grain Growth

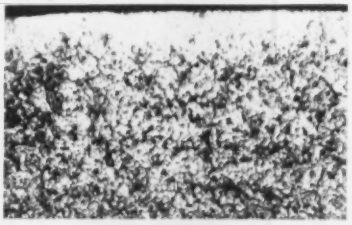
AISI No.		Before	1700° F	1800° F	1900° F	2000° F
1117	(1-	8	6-7	6-7	4-6 duplex	3-5 duplex
4615	hour	8	8	8	8	7-8
8620	cycle)	8	7	7	4-7 duplex	4-6 duplex
9315		8	8	8	8	8
1117	(3-		5-7	4-7 duplex	4-6 duplex	3-6 duplex
4615	hour		8	8	8	6-7
8620	cycle)		7	7	3-7	3-6 duplex
9315			8	8	8	8

Reheat and Oil Quench Refine Grain Size

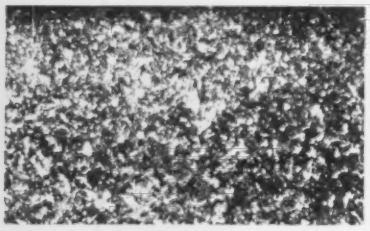
All photos: X100–2 per cent Nital etch



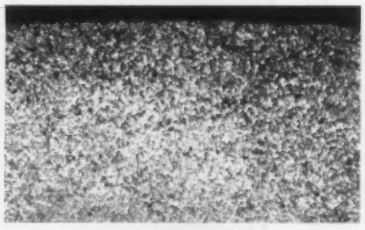
1117 steel carburized 3 hours at 1900° F and atmosphere cooled.



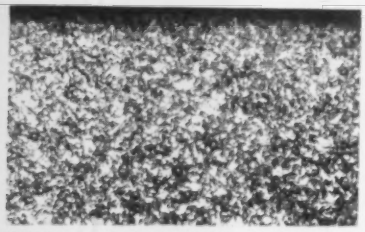
1117 steel carburized 3 hours at 1900° F, atmosphere cooled, reheated to 1500° F, and oil quenched



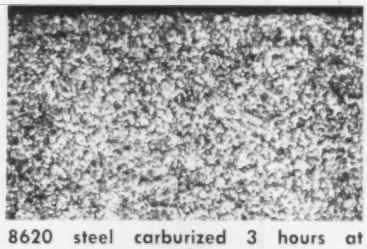
4615 steel carburized 3 hours at 1900° F and atmosphere cooled



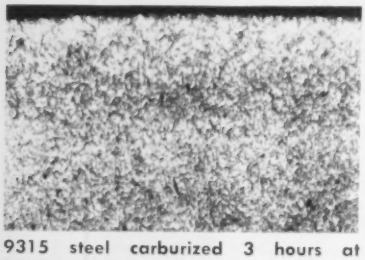
4615 steel carburized 3 hours at 1900° F, atmosphere cooled, reheated to 1500° F, and oil quenched.



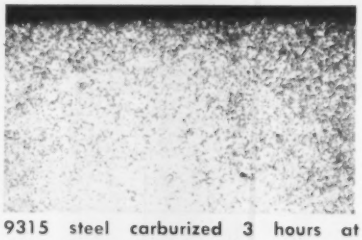
8620 steel carburized 3 hours at 1900° F and atmosphere cooled



8620 steel carburized 3 hours at 1900° F, atmosphere cooled, reheated to 1500° F, and oil quenched



9315 steel carburized 3 hours at 1900° F and atmosphere cooled



9315 steel carburized 3 hours at 1900° F, atmosphere cooled, reheated to 1500° F, and oil quenched

dustries has long supplied furnaces suitable for hardening and brazing up to 2100° F. Now, the same type furnace is available in larger sizes and can be used for high temperature gas carburizing without major change.

Failure-prone alloy parts have been replaced with high density refractory materials. They include such components as hearth and hearth support members, radiant heat transfer tubes, conveyor rollers, directional flow baffles, and high speed forced circulation fans.

Four Steels Tested—Ipsen selected 2000° F as the maximum furnace temperature for its investigation, with duplicate tests at 1700, 1800, and 1900° F for comparison. Holding times for each temperature were set at 1, 2, and 3 hours, followed by atmosphere cooling. The quench reactions following reheating were studied in later investigations.

Tests were made on four commercial grades of steel: AISI 1117, a carbon grade; 4615, a nickel-moly steel; and the nickel-chrome-moly grades 8620 and 9315.

A standard, gas fired Ipsen Model TC-1-150-G furnace was used with enriched endothermic atmosphere in the heating and cooling chambers. Forced convection heating of parts was done by a newly developed ceramic fan. A standard, controlled dew point type of endothermic generator provided the atmosphere.

Procedure for Tests — Test bars were cut to length and rough ground to remove possible surface decarburization. The four grades of steel were loaded in the furnace, interspersed among new bars of C1018 steel. Twelve loads were prepared in baskets to approximate an individual gross weight of 35 lb.

Automatic air-gas ratio control at the generator provided dew points of 35° F for 1700° F furnace operation, 25° F for 1800° F, 20° F for 1900° F, 15° F for 2000° F. Adding of raw natural gas to get the lower dew points required for high temperature operation was held to a minimum and controlled through an Ipsen Dewtronik. Atmosphere usage was 200 cfh, that of raw gas additive 5 to 15 cfh.

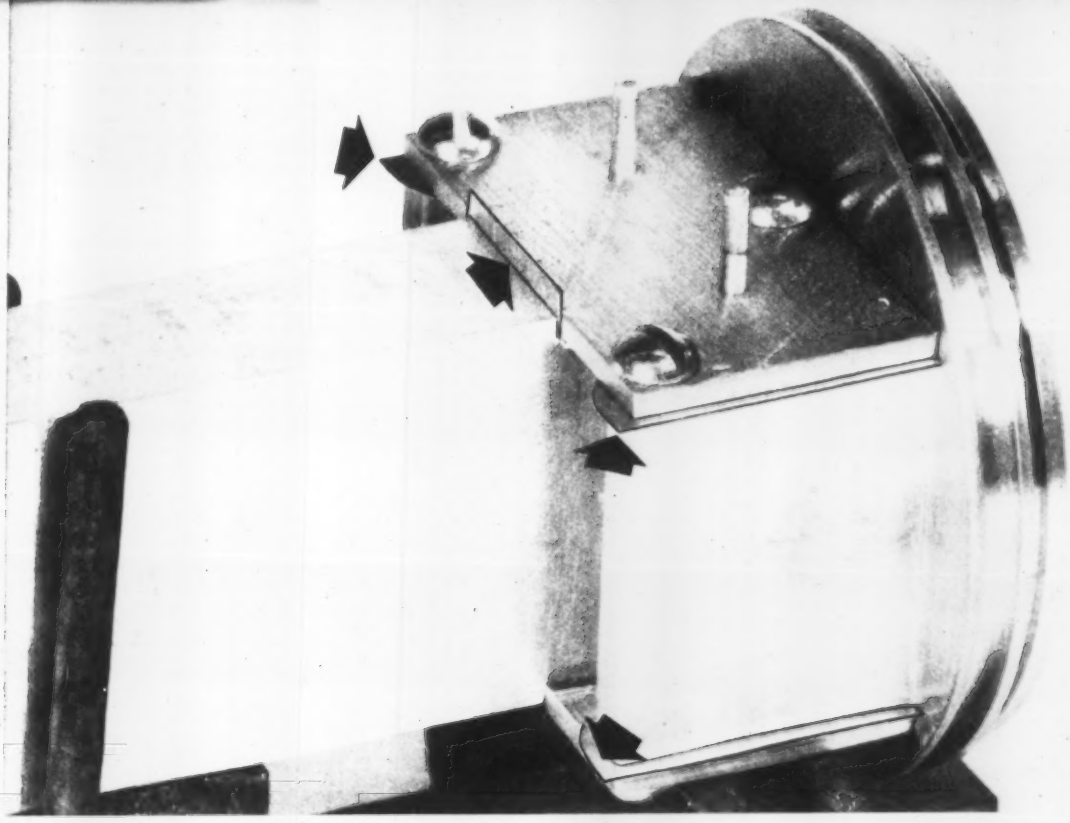
Dew points were checked by the Dewtronik, Alnor, and Visual CO_2 Cup tests. They were interpolated from published curves to conform to a potential of 0.90-1.00 per cent carbon at the four temperatures.

Recording Results — After treatment, parts were measured to check dimensional growth, and microspecimens were prepared to determine average total case depth, based on different locations on each sample. (Total case was considered to be that depth at which carbon in case and core were the same.)

The investigation of dimensional growth indicated no change or trend relative to type of material or processing. Grain growth was determined in accordance with ASTM E-19. The results are shown in the table on Page 99.

The 1 and 3 hour cycle samples were reheated in an Ipsen T-4-600B-GM furnace and held at 1500° F for 1 hour in a controlled atmosphere with 30° F dew point. Samples were quenched in 150° F oil.

The photomicrographs on these pages show results of carburizing at the four temperature levels and after reheating. On certain steels, reheating and quenching produced considerable grain refinements.



The inside of this wave guide has to be exceptionally accurate. Arrows show some of the filler metal strips before assembly is immersed in flux bath. Fixture insures alignment

Magnesium Dip Brazed Accurately

Joining such parts with other methods can produce much distortion, increasing finish machining. This procedure minimizes such changes, improves quality

DIP BRAZING is a valuable production tool for joining magnesium, says Dalmo Victor Co., Belmont, Calif.

The firm uses the process on precision wave guides for radar systems. Results: Lap joints hold 14,000 psi; pressure tests at 35 psi show that less than 0.25 per cent leak; an x-ray shows almost no porosity or voids; the method does not distort the part as much as welding does.

How It's Done—Parts have to be deburred to produce a successful braze. The company finds that the M1A and AZ31B (FSI) work best with AZ 125 filler metal and Dow Chemical's 452 brazing flux.

Parts are degreased, then lightly sanded with an aloxite cloth or put into an electrolytic dip. A hot water rinse and drying follow.

Filler metal shims and wires are inserted during assembly. (You can form or stamp AZ 125 even though it's a little brittle.) Use a brazing fixture, and be sure to allow 0.004 to 0.006 in. clearance so filler metal can flow properly. Try staking, self-positioning, spring loading, or tackwelding to hold parts during dipping.

Preparation Important — Preheat the parts to evaporate moisture and cut heat loss in the flux bath. (The company uses an oven set at 850° F.)

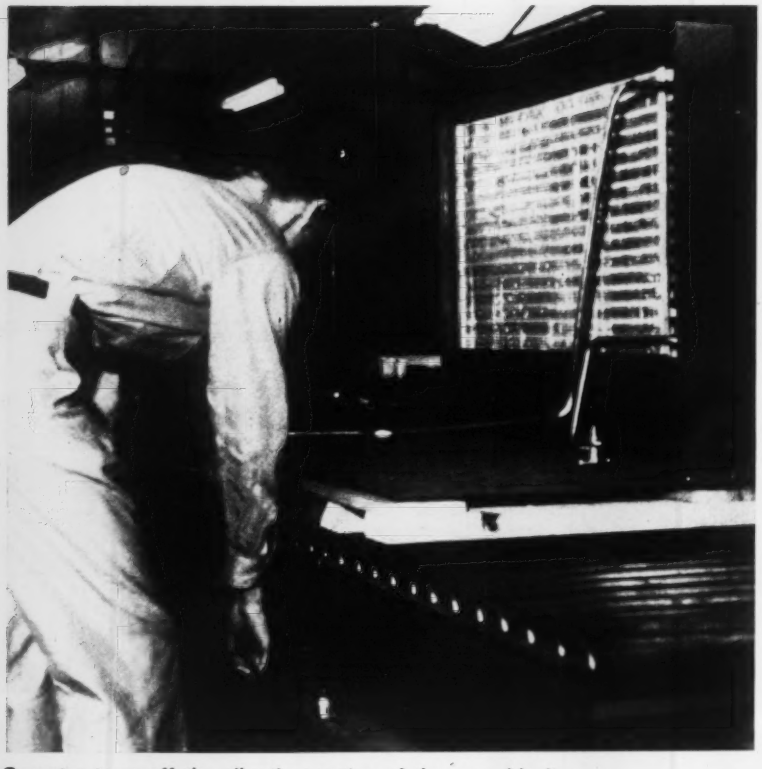
After preheat, parts are immersed in the flux bath, then removed and cooled to 600° F. A hot water rinse is used to remove frozen flux. A 1-minute dip in Dow No. 1 is followed by a 5 per cent sodium dichromate solution. Finish machining and protective coatings complete the process.

Four Suggestions—Keep fixtures small. Heavy ones reduce the bath temperature and increase dragout.

Be sure fixtures drain well. Trapped flux in blind holes and crevices is a serious problem—you need a free flow of water for rinsing.

Make fixtures of stainless or high chrome steel. A number of salt baths are highly corrosive.

Allow for differences in expansion rates of steel and magnesium.



Operator turns off the vibrating section of the assembly line

Vibrator Aids Testing

Shaking condenser units for 1 minute weakens faulty soldered joints. They are easily located in a pressure test. Vibrating station is an integral part of the assembly line

AIR CONDITIONER manufacturers have been plagued with faulty connections: Soldering flaws strong enough to stand up under a 400-psi test loosen under the jolts of shipping. They show up after the units are installed.

A midwestern manufacturer has the answer: Put the units over the bumps on a vibrating roller conveyor. The section precedes the pressure test booth.

One-Minute Test—Each unit is stopped on the vibrating section for 1 minute of violent shaking. It's enough to shake loose any faulty connections, which then show up in the pressure test.

The section has a standard roller conveyor top and base. The roller top is supported by four stiff coil springs that amplify the vibration and prevent its transmission to the floor.

A vibrator, made by Cleveland Vibrator Co., Cleveland, is bolted to the longitudinal structure of the conveyor top. The unit, which operates on 80 psi of air pressure, delivers 1000 blows a minute.

Faster Checker Cleaning

The secret to efficient cleaning of blast furnace and open hearth checkers is making an opening in the checkers in a short time and using rugged equipment that is easy to handle. One compact unit is made by Thomas C. Wilson Inc., Long Island City, N. Y. It has an air driven motor with forged, carbide-tipped cutter bits.

The diameter of the motor is less than the square size of the checkers, giving the bits enough play to drill into corners rapidly. When the cleaner is fed downward, dislodged debris falls clear.

The unit cleans with a battering and oscillating action. It is retracted while still running. In its upward travel, it tends to break additional deposits.

Cleaning Large Checkers — In open hearths, the opening made is large enough for use of larger bits, mechanical cutter heads, or chain heads. If a thorough cleanup into the corners is required, it is handled by rodding manually or with pneumatic drills.

The equipment opens solidly plugged square checkers at a rate of 3 to 4 ft every 5 minutes. In one case, only 6 minutes were required to make an enlarged opening in several 9 in. square checkers that were plugged from 4 to 8 ft of their depth.

Heated Dies Keep Accuracy

Stretch dies weighing 4000 lb are heat treated without distortion or decarburization at National Heat Treating Co. Inc., Inglewood, Calif.

The company heat treats tools for North American Aviation Inc., Los Angeles. After treatment, the high speed steel dies are accurate to ± 0.0005 in.

Process—A die is placed in a sand-sealed retort containing a hydrocarbon compound which emits protective gas when heated above 1400° F. It prevents decarburization.

The retort is preheated to 1600° F for 2 hours to activate the compound. Then it is held at 2200° F for 1 hour to assure maximum tool strength.

Distortion is prevented by removing the retort from the furnace and cooling it in open air. The parts have a Rockwell C hardness of 60 to 62. They can be nitrided.

Cold Rolling Puts a Tougher Face . . . on an "Old Salt"

To increase fatigue resistance, endurance limit and to fight the corrosive action of the sea, Erie Forge & Steel technicians cold roll ship's tail shafts as illustrated above. The life of the forged steel tail shaft is prolonged by cold rolling under the propeller and the after bearing. The surface toughness thus effected reduces fretting corrosion, minimizes pitting, costly failures and the hazard of propeller loss at sea.

Cold rolling is applied not only to new shafting but also for reconditioning existing ship's shafts, thus saving sizeable replacement costs in many instances.

Designed and built by Erie Forge & Steel engineers, the machine cold rolls shafts of any length and up to 30 inches in diameter. Any desired pressure up to 37,000 pounds can be exerted by the hardened steel rollers on each side of the shaft.

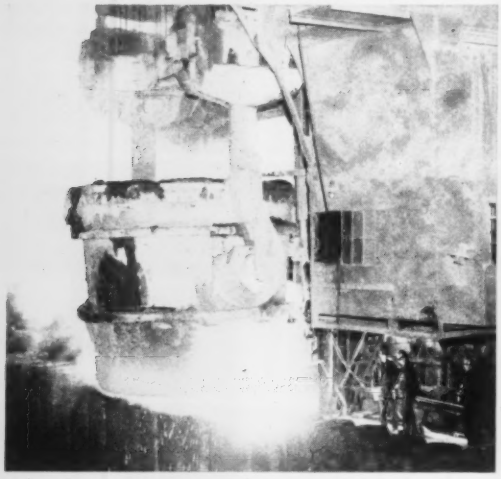
The Society of Naval Architects and Marine Engineers recommends that all ship's propeller shafts be cold rolled as a safety measure. This cold rolling process is approved by The Bureau of Ships, United States Navy.

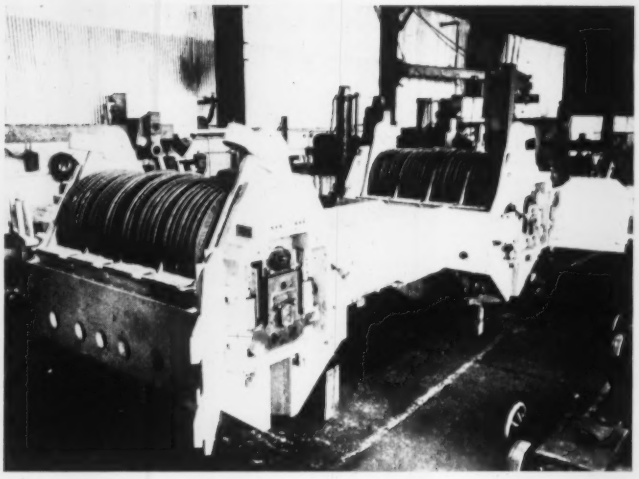
Another of the special services characteristic of the continuing progress in steel improvement at Erie Forge & Steel. Let us work with you on your steel forging and casting requirements.

ERIE FORGE & STEEL CORPORATION

ERIE, PENNSYLVANIA

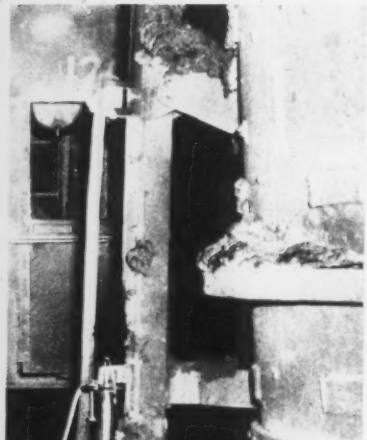
MEMBER AMERICAN IRON AND STEEL INSTITUTE





Instrumentation for controlling the weight of metal dispensed is in the crane cab and on the double hook spreader beam. Load cells (right) on the spreader beam are protected by a sturdy case

Automatic Pouring Ups Yield



A hydraulic cylinder on the stopper replaces the manual lever. It operates by pushbutton or automatic control

Strain gages are used to measure the exact weight of metal poured into ingot molds. They are accurate to 1 part in 8000. Hydraulic-electric device closes the stopper

AUTOMATIC POURING control designed by Republic Steel Corp., Cleveland, assures uniform ingot weights and eliminates the hazards of manual teeming.

When ingots are poured manually, weights often vary plus or minus 8 per cent. Insufficient metal results in the loss of part of one bloom, billet, or slab; overweight ingots require excessive cropping.

The new method (called Ingotrol) controls ingot weight to nearly 1 per cent. Metal has to be dispensed to an accuracy of 100 lb. This demands exactness of 1 part in 8000 (the total load is 800,000 lb).

Using the System—The control has three elements: A weighing device to sense the quantity of metal dispensed; a hydraulic unit to replace the manual lever of the ladle stopper; and a control unit to correlate the two with requirements.

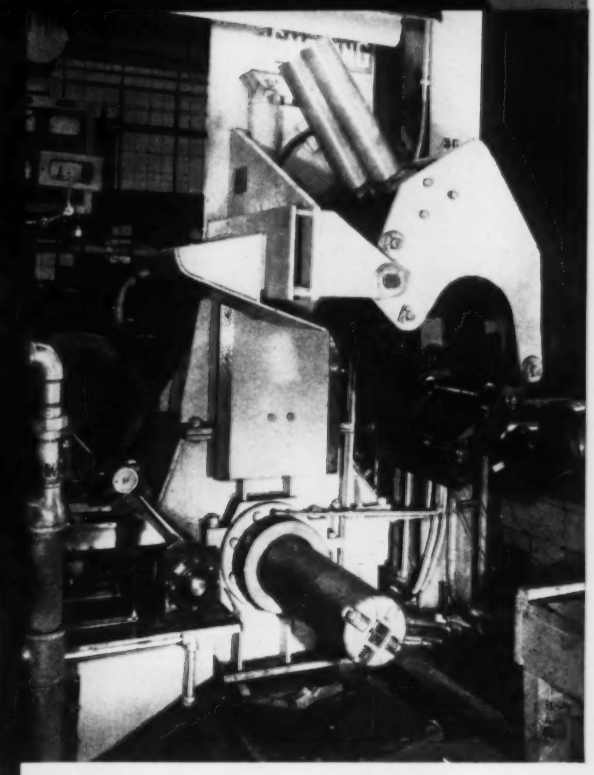
Operation is simple. The crane operator moves the ladle near the crane cab and makes an electrical connection to the hook spreader beam that houses the weighing devices (load cells). The hydraulic pouring device is attached at the pouring platform.

To start pouring, the operator presses the open button on the control box, the stopper rod in the ladle rises; and molten steel flows into the ingot mold. The weighing circuit measures the amount of metal dispensed and warns of approaching full weight by sounding a

Auxiliary Equipment
by Pittsburgh

4 HIGH COLD ROLLING MILL

Mandrel Type Payoff Reel



Tension Reel and Belt Wrapper

The auxiliary equipment illustrated above is representative of numerous installations designed and built by Pittsburgh in many leading metal fabricating plants. Consult us for your ferrous or non-ferrous mill equipment requirements—from major mill construction to small auxiliary jobs.

"Electric and open hearth steel castings from 1 lb. to 100 tons"

Pittsburgh
ENGINEERING & MACHINE

Division of Pittsburgh Steel Foundry Corporation

P. O. BOX 986, PITTSBURGH 30, PENNSYLVANIA
PLANT AT GLASSPORT, PENNSYLVANIA

horn. The operator lowers the stopper and reduces the rate of flow. When the correct weight is reached, the scale closes the stopper.

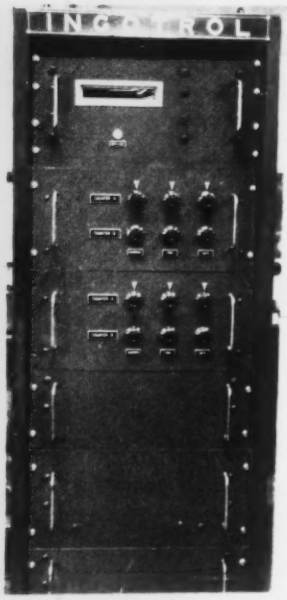
How It Works—The heart of the system is the weighing device: A load cell that is attached to the double hook spreader beam of the large ladles.

Deformation of the supporting structure under load is conveyed to a strain gage, causing a change in the electrical resistance of the gage wires. The change is measured to weigh the metal.

Moisture and heat also change the resistance of the gage. The hermetically sealed unit is enclosed in a sturdy case for mechanical protection. The effect of heat is compensated for through special circuitry.

Stopper Is Redesigned—The manual lever mechanism for opening the ladle was replaced with a hydraulic cylinder. The unit is commercially available. It is called Autopour. A solenoid control can be actuated by a remote pushbutton or tied into the weighing system.

Electric preset counters meter the metal as it is dispensed. When the required weight is reached, the counter automatically operates the solenoid valves.



Counter dials on the Ingotrol are set for the weight of metal that should be dispensed

Steel straps hold packages as workmen show . . .

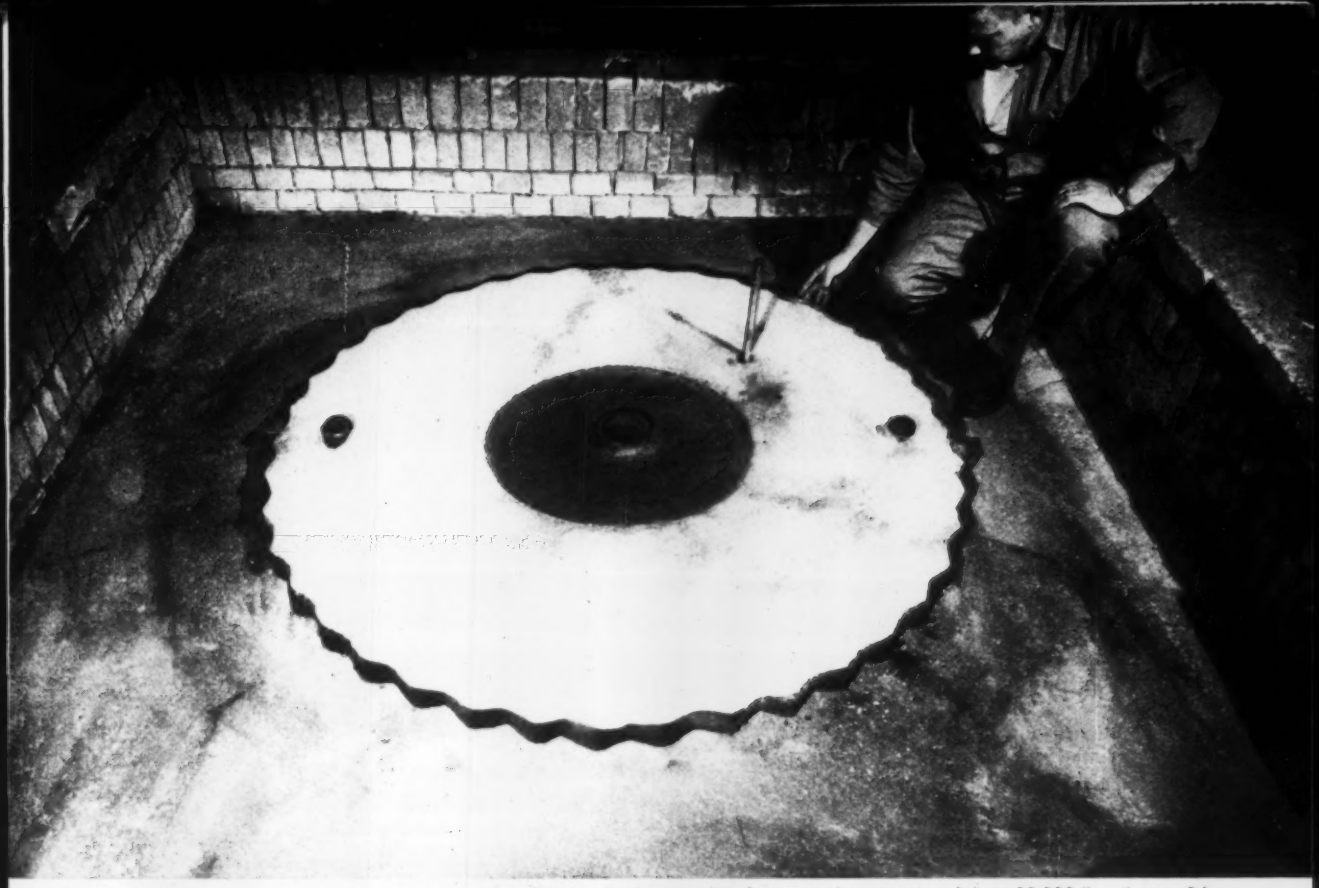
How To Ship Long Rods

HERE'S a way to package rods that will cut handling time and reduce damage to threads or straightness during shipment. It's being used by Spang-Chalfant Div., National Supply Co., Ambridge, Pa., for sucker rods (25 to 30 ft long) which must meet rigid specs on straightness. (They're used by the oil industry.)

Low Cost Solution — Two elements (spacers and straps) are required to make packages of 40 to 80 rods. The spacers, oxiline treated wood blocks 28½ in. long with 15 or 20 grooves across both sides, separate and hold the rods. Five or six sets are used at a spacing of 66½ in.

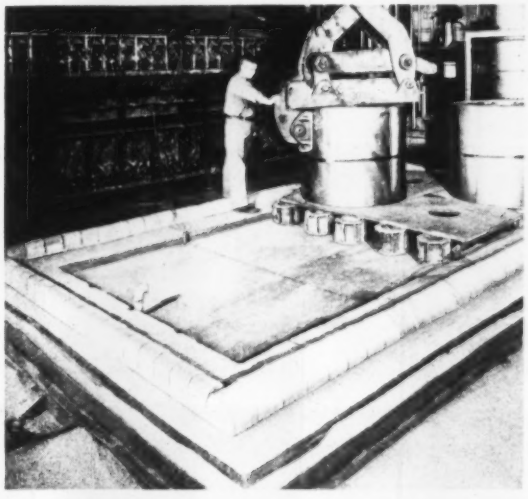
Top and bottom supports are 2 by 4 in. blocks, grooved along one side. The unit is held together by steel straps. Rods are ⅝ to 1 in. in diameter with upset ends for the threaded joint and a square section for gripping with a wrench. Four layers are held between five separators. The upset ends are staggered for compactness.

Two lifting rods and a set of wire rope slings are included with each package to aid overhead handling in the field. Gin pole trucks are commonly used.



Four-stack strip annealing furnace with a capacity of three 30,000 lb coils on a 34 to 36 hr firing cycle, 68 to 78 hr cooling, operating at a strip temperature of 1320 F in a 8.2% CO atmosphere. The base, 9" thick hearth and portions of the curb are cast of B&W Kaocrete-A.

B&W Kaocrete-A resists CO disintegration and sand penetration at Granite City Steel



B&W Kaocrete-A is cast in the hearths and curbs of these furnaces where firebrick refractory was previously used.

Granite City Steel states that both bases have been in use for over three years without any disintegration resulting from the CO atmosphere. In addition, the monolithic structure of this B&W castable refractory eliminates the destructive effects produced by sand penetrating the joints and cracks of firebrick hearths.

For further information on B&W's specialized refractory castables, write for Bulletin R-35.

Strip annealing furnace with a capacity of 70 to 80 tons per charge on a 24 to 48 hr firing cycle, 48 to 96 hr cooling cycle, operating at a strip temperature of 1320 F in a 8.2% CO atmosphere. 4½" lining of B&W Kaocrete-A is used on hearth and curbs.

B&W REFRACTORIES PRODUCTS: B & W Allmul Firebrick
B & W 80 Firebrick • B & W Junior Firebrick • B & W Insulating Firebrick
B & W Refractory Castables, Plastics and Mortars
B & W Silicon Carbide • B & W Ramming Mixes • B & W Kaowool

BABCOCK & WILCOX
THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 161 EAST 42nd ST., NEW YORK 17, N.Y.
WORKS: AUGUSTA, GA.

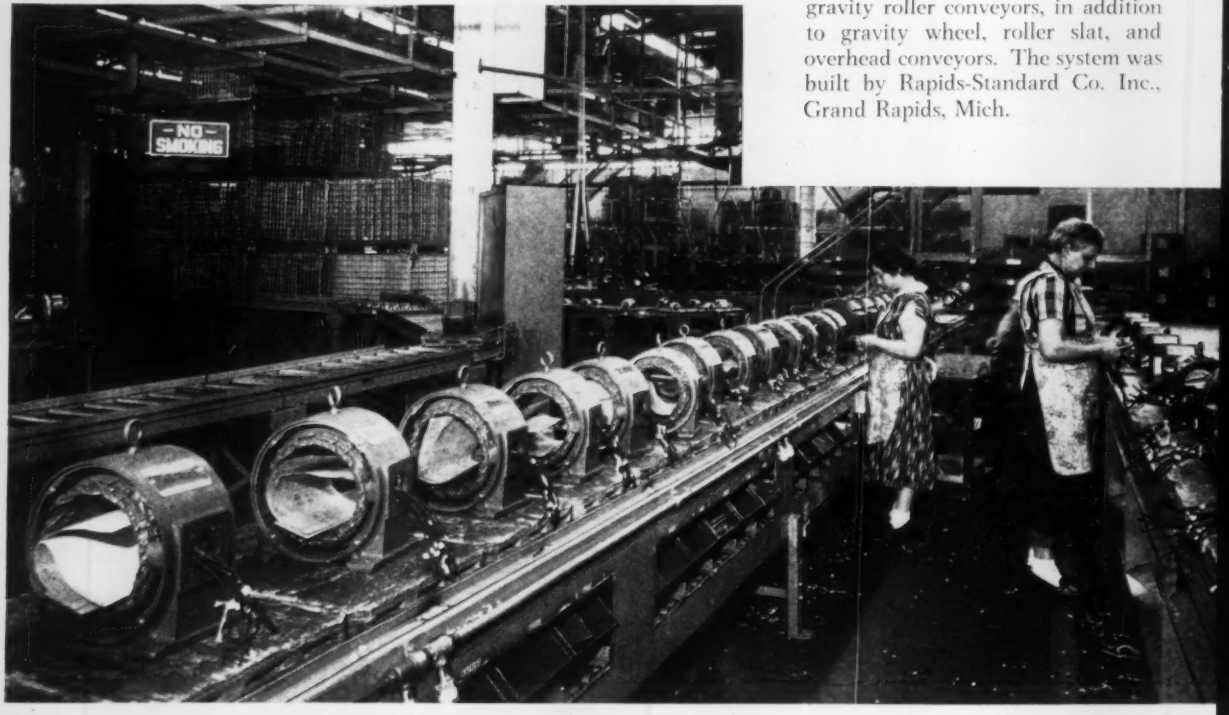
R-595

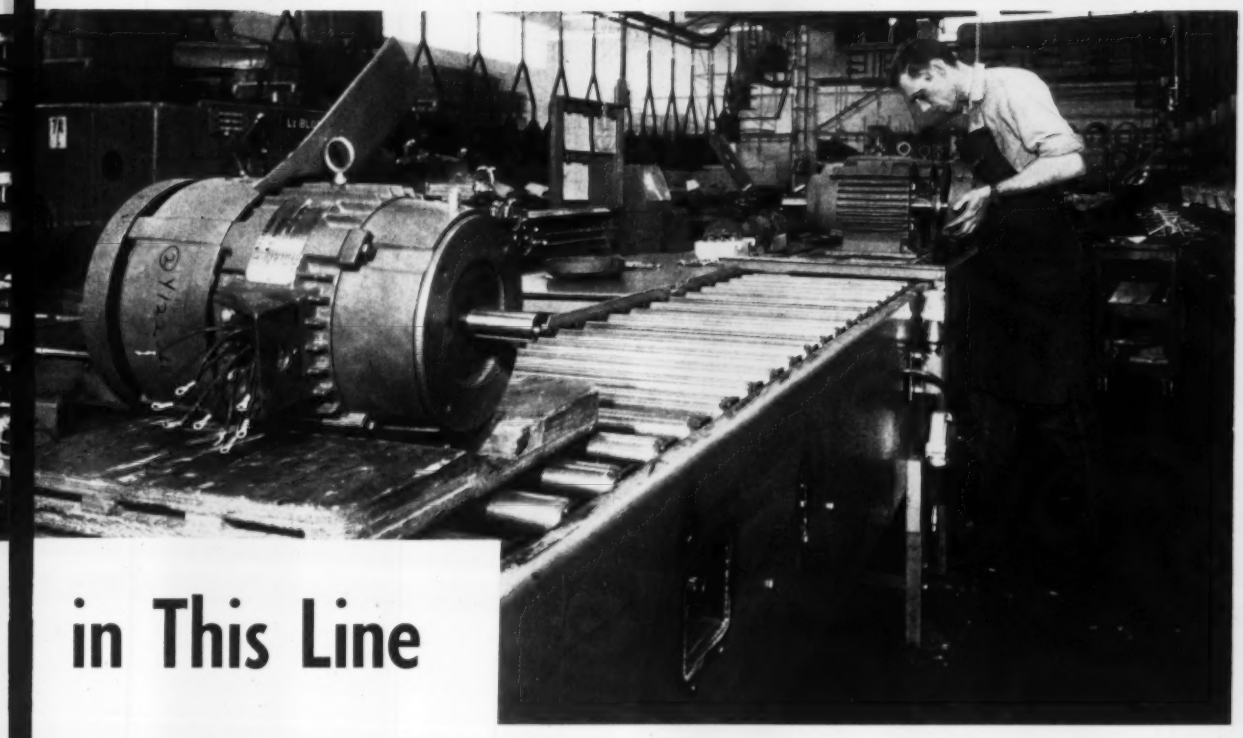
When a production order is received, stator cores are removed from selection racks (above) and sent on gravity rollers to the co-ordination area. Meanwhile, the specified number of stator coils are wound and sent to the dispatcher who completes the subassembly. A roller line leads to the winding operation, and from there the core is forwarded to an area where joints are brazed, insulated, and sewed. The terminal assembly area is pictured below. Lines are powered at this point because of the increased weight

No 'Waiting'

CONVEYORS keep parts moving and minimize intermediate storage at Reliance Electric & Engineering Co.'s Ashtabula, Ohio, plant. The system (for the production of electric motors) is set up to build parts for stock instead of being geared to the filling of orders.

The plant uses over 1000 ft of gravity roller conveyors, in addition to gravity wheel, roller slat, and overhead conveyors. The system was built by Rapids-Standard Co. Inc., Grand Rapids, Mich.





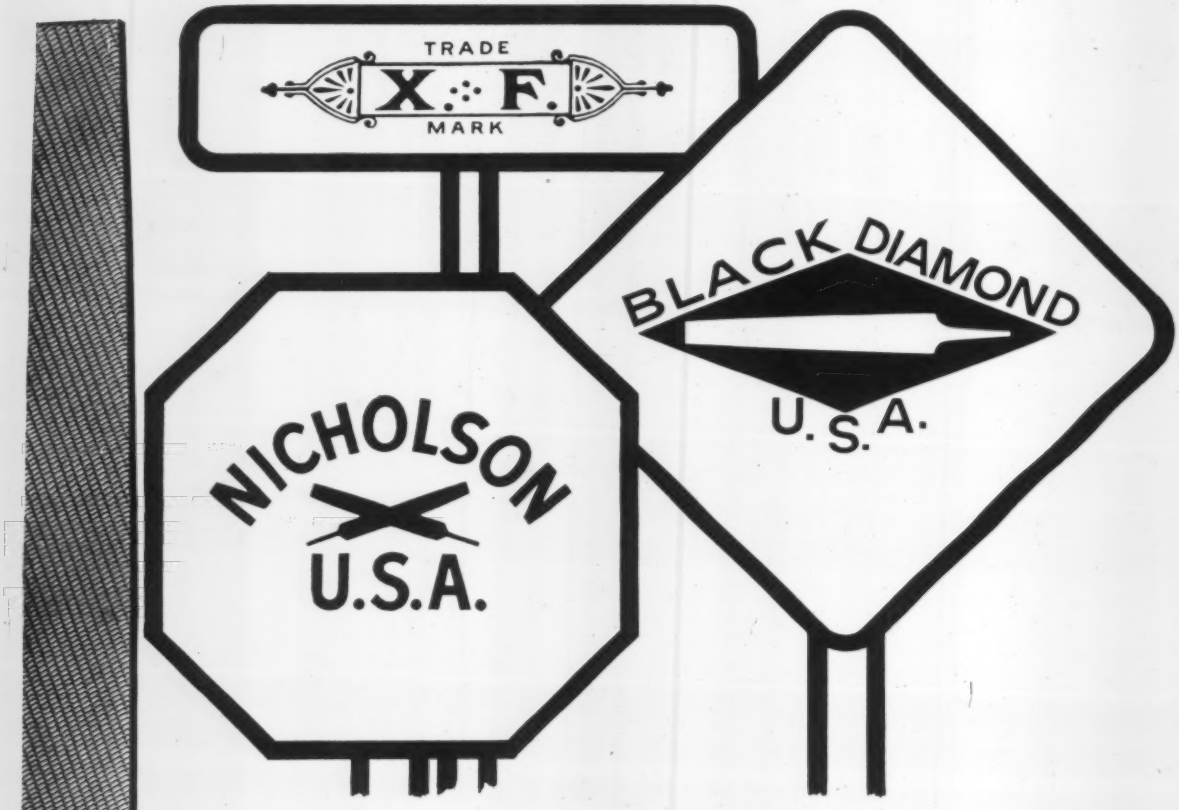
in This Line

Reliance is tooled to produce over 350 assembled motors daily. Production of a completed motor takes three days, vs. five formerly.

Elmer W. Frisbie of Reliance states: "Housekeeping is simplified because we don't have dead storage. We do not accumulate pallets, trays, boxes, or parts. A magnetic belt picks up scrap and transports it to an outside storage bin.

"Our employee morale is good—they like the system because all lifting is virtually eliminated."

Cores are carried through an automatic varnishing machine; then they are cleaned. The operator notifies five areas—frame storage, end part storage, (above), start of the rotor line, shipping office, and production control desk—that the motors are ready for assembly. The five areas start selecting parts and begin building subassemblies. All parts arrive in the final assembly area at the right time, where motors are assembled, tested, and readied for shipment. They are shown (below) after the final inspection



THREE GUIDES TO GOOD FILING RESULTS

Each of these trademarks on a file is a *guarantee* of satisfaction.

None of them ever appears on a file until our quality control inspectors are satisfied that the file deserves it. It doesn't take much for one of these cold-eyed policemen to turn a file down.

As they guard the reputation of Nicholson, Black Diamond and X.F. Swiss Pattern files, they also protect you. They make sure that these trademarks will live up to their reputation on whatever job you give them to do.

Because we take extra care to make every file just a little bit better, they do a little more for you. And just a small performance improvement cuts filing time in your shop substantially. And that's where a file proves its real worth . . . and the reason why files with these trademarks are at work in more shops than any other.

You can trust these symbols to guide you to the best filing results. They've been doing just that for file users and buyers for over 90 years.

"Magicut" All-Purpose Machinist's file. One of 6000 quality files bearing the Nicholson File Company trademark.

*** Industrial Distributors provide the finest goods and services in the least possible time. Our products are sold exclusively through them.**

NICHOLSON FILE COMPANY, PROVIDENCE 1, RHODE ISLAND

(In Canada: Nicholson File Company of Canada Ltd., Port Hope, Ontario)

NICHOLSON and BLACK DIAMOND FILES

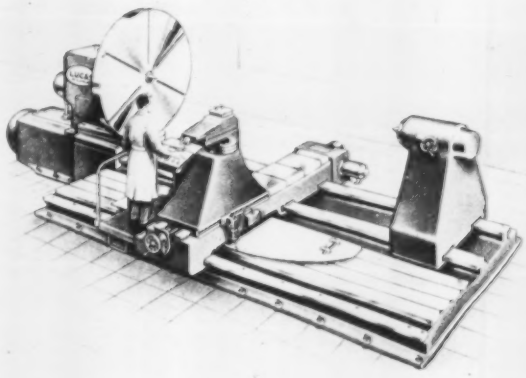
A FILE FOR EVERY PURPOSE

Large Lathe Is Numerically or Tracer Controlled

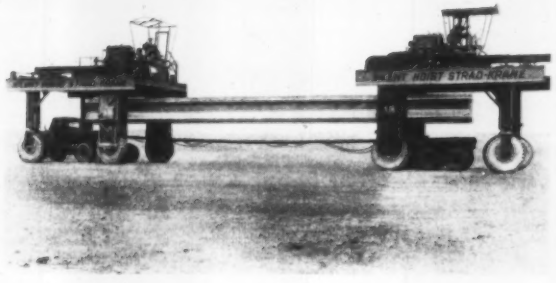
This lathe is designed for turning on cylindrical, conical, or developed shapes on lightweight pieces of great length and diameter. Three hardened and ground ways support the carriage.

The machine is available in semiautomatic and tape controlled models. The semiautomatic incorporates a one or two dimension electronic tracer control for cross slide and carriage. Cross slide and carriage of the automatic models are controlled by punched tape, numerical positioning or magnetic tape, contouring control.

On tracer controlled models, flat templates are mounted on a T-slotted plate between the outer and intermediate ways. *Write*: Lucas Machine Div., New Britain Machine Co., 12302 Kirby Ave., Cleveland 8, Ohio. *Phone*: Glenville 1-5588



Combination Truck and Crane Straddles Work



The Strad-Krane is a traveling bridge and mobile crane. The center of the load is always inside the wheel supports, eliminating the need for counterweights, stabilizers, or jacks. Inside clearance is 12 ft high and about 12 ft wide. Two units are shown in tandem.

The load is suspended from a hook under the frame. It can travel from one end of the machine to the other as well as up and down.

The machine is self-propelled on pneumatic tires. Power steering and power brakes plus excellent visibility provide fatigue-free operation.

Model ST25 has a 25-ton capacity and travels up to 10 mph forward or reverse. *Write*: Dept. 39, Silent Hoist & Crane Co., 841 63rd St., Brooklyn 20, N. Y. *Phone*: Beachview 8-2525

Flexible Ovens Built from Infrared Heating Modules

Infrared heating modules with housings that can be stacked into any layout to meet variable heating requirements use elements of formed resistance wire.

These units give immediate, even heat. They require minimum maintenance and are designed for long life. Their radiation heats all colors.

Handles on the back allow for stacking and rearranging from the outside. Modules have three power outputs: 1, 2, and 3 kw. Temperature runs up to 1500° F at the base.

Infrared is used in preheating for shrink fits, silver soldering, drying of aluminum in anodizing, drying of ground enamel frit prior to firing, and the baking of primers, enamels, and electrical varnishes. *Write*: Infrared Systems, P. O. Box 1, Pompton Lakes, N. J.

NEW PRODUCTS and equipment

Drop-Bottom Dumping

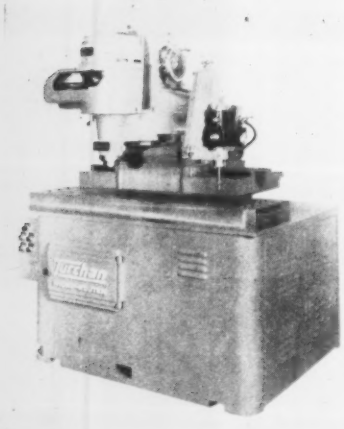
A hydraulic box dump attachment for handling drop-bottom boxes fits Elwell-Parker fork trucks with capacities from 2000 to 10,000 lb.

This type box may be loaded quickly and dumped onto floors or conveyors, or into bins, hoppers, or freight cars. *Write*: Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio. *Phone*: Utah 1-6200

Compact Tool Is Versatile

The Hydro-Router is equipped with Turchan tracing control, a stationary table for large overhanging workpieces, and a completely enclosed power unit.

The adjusting assembly features double crank, compound, rest-type handwheels with large dials readable in 0.001 in. The slides and gibs are hand scraped to insure accuracy and the indicator is checked before and after installation.



The tracing feed rate is infinitely variable. *Write*: Turchan Follower Machine Co., P. O. Box 6055, Dearborn 9, Mich. *Phone*: Webster 3-6484

Provides Wrinkle Finish

Logo Wrinkle EA-616 is for use as a base coat for vacuum metallizing on metal stampings and castings. A 30-minute bake at 325° F will cure it to a hard, durable state. *Write*: Logo Div., Bee Chemical Co., 12933 S. Stony Island Ave., Chicago 33, Ill. *Phone*: Mitchell 6-0400

Welder Provides Power

The DAH-350 Fireball is the largest of three power options in a series of gasoline engine driven welder-powerplants.

This model is a four-in-one unit that incorporates an ac-dc welder for metallic arc or tungsten inert gas welding, an ac powerplant, and 1 kw of dc power while welding.

Six separate amperage ranges are available in both alternating and direct current. *Write*: Miller Electric Mfg. Co. Inc., Appleton, Wis. *Phone*: Regent 3-6621

Pumps Subzero Fluids

Four complete lines of standard pumps handle liquid oxygen, nitrogen, methane, and other fluids to −320° F and below.

The pumps may be operated over the entire performance range, even back to near-zero capacity, without damage, and capacity can be varied by changing the speed of the driver, rather than using throttling valves.

The seal has a built-in throttle bushing that prevents hazardous leakage should a seal component fail. *Write*: Byron Jackson Pumps Inc., Borg-Warner Corp., P. O. Box 2017-A, Terminal Annex, Los Angeles 54, Calif. *Phone*: Ludlow 7-6171

Liquid Cleans Aluminum

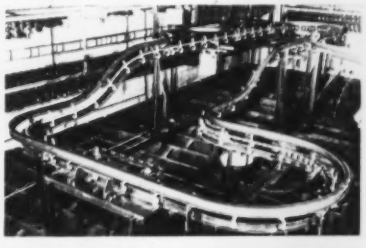
Deoxalum, an aluminum cleaner and deoxidizer, is applied by brushing on the aluminum surfaces before welding or joining.

It can be wiped off—no brushing is required. Small parts can be treated by dipping and flushing with water. *Write*: Clarkson Laboratories Inc., 930 N. Darien St., Philadelphia 23, Pa. *Phone*: Market 7-6764

Conveyor Has Pusher

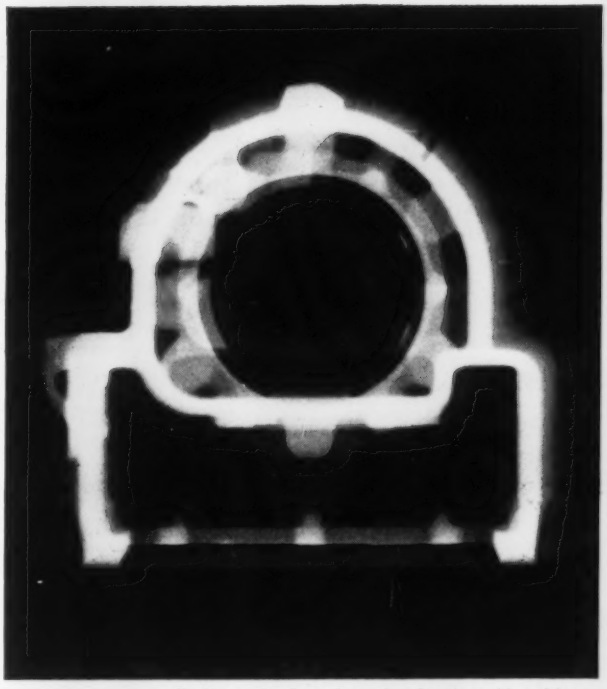
A Power-Push overhead conveyor for light to medium duty can be made to specifications. The system consists of standard components plus a four-wheel trolley that carries loads up to 150 lb, and a pusher mechanism.

The trolley on the power line pushes the trolley on the free line. The two lines can be diverted by being curved away from each other



Shrink caused leakage...

Radiography showed how to correct it



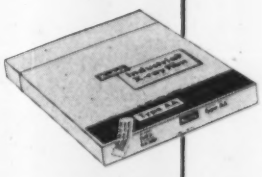
Radiograph of rough casting for air turbine-driven power supply gear housing.

This casting is the gear housing of a vital air turbine-driven power supply produced for the Utica Division of Bendix Aviation Corp. for use in jet-age aircraft. It must operate at temperatures up to 300°F with utmost dependability.

Seepage of oil through the shell was a recurring problem. And this is where radiography came in with a double-barreled assist. First, radiographic examination of the rough castings provided information to help determine whether the castings would prove acceptable when machined — *before* more than 150 machining operations were performed. Second, the radiographs revealed the cause of the difficulty—internal shrinkage—and disclosed a recurring pattern which led to placing chills so as to overcome it.

Result: a critical part became a routine production item with substantial savings in time and costs to both foundry and manufacturer.

If you would like to know how radiography can improve your own operations, talk it over with your x-ray dealer—or the Kodak technical representative.



The new Kodak Industrial X-ray Film, Type AA, gives you these advantages

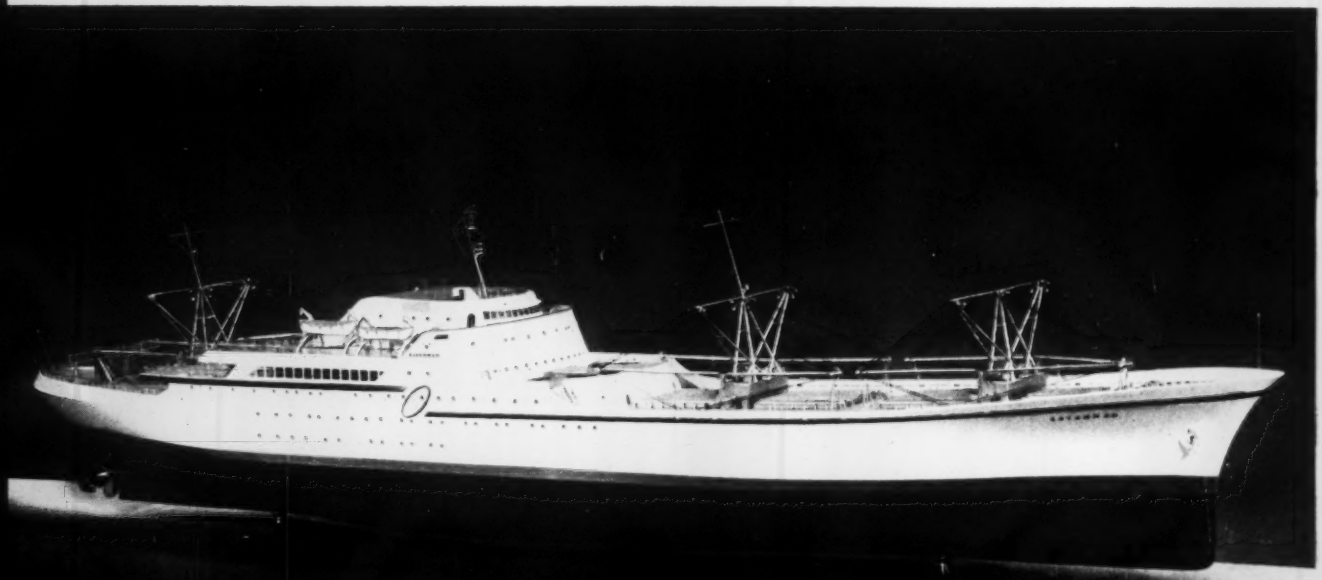
- Reduces exposure time—speeds up routine examinations.
- Provides increased radiographic sensitivity through higher densities with established exposure and processing technics.
- Gives greater subject contrast, more detail and easier readability when established exposure times are used with reduced kilovoltage.
- Shortens processing cycle with existing exposure technics.
- Reduces the possibility of pressure desensitization under the usual shop conditions of use.

Kodak Industrial X-ray Film, Type AA, is now available with or without interleaving paper, as you may desire.

EASTMAN KODAK COMPANY
X-ray Division · Rochester 4, N. Y.

Kodak
TRADE MARK

Creative Engineering by DE LAVAL



One of the U.S. Government's exhibits at the Brussels World's Fair is the model of the first nuclear ship, the N/S SAVANNAH, shown above.

The De Laval Steam Turbine Company is proud to play an important part in the design and construction of this 22,000 shaft horsepower vessel, the keel of which was laid on May 22, 1958, Maritime Day, at the New York Shipbuilding Corp. in Camden, New Jersey.

Under the joint sponsorship of the Atomic Energy Commission and the U. S. Maritime Administration, major contributions to the design and construction of the vessel and its machinery are being made by:

- *George G. Sharp, Inc., naval architects, designers of the vessel*
- *Babcock & Wilcox Company, designers and builders of the pressurized water reactor and its accessories*
- *New York Shipbuilding Corp., Camden, N. J., builders of the vessel*
- *De Laval Steam Turbine Company, designers and builders of the main propulsion machinery, other engine room auxiliaries; coordinators of all engine room equipment.*

We are particularly happy to serve in connection with this project of international importance. De Laval has often performed other important services as complete engineering coordinators, and is fully prepared to undertake similar assignments.

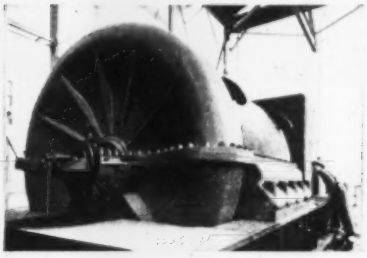
DE LAVAL *Steam Turbine Company*

860 Nottingham Way, Trenton 2, New Jersey

More Ways

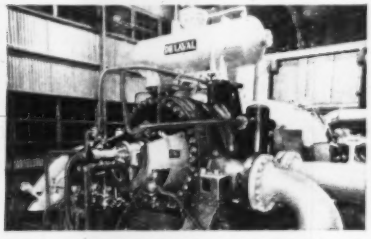
DE LAVAL

Creative Engineering Serves Industry



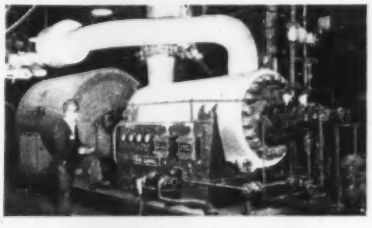
Centrifugal Compressors for Refineries

Shown here is a De Laval 10,200 H.P. turbine-driven main air blower handling 83,000 cubic feet per minute at the Ashland Oil & Refining Co., Ashland, Ky.



Extra Flexibility for Gas Pipelines

Creative engineering developed new De Laval Series-Parallel centrifugal compressors to meet booster stations' demand for exceptional flexibility.



Rugged Feed Pumps for Public Utilities

De Laval couples *creative engineering* and precision manufacturing methods to produce multi-stage centrifugal pumps for boiler feed service—built to handle pressures up to 5,500 pounds. This is an 11-stage unit in the Astoria Station of Con Edison.

Investigate the advantages of De Laval's *creative engineering* in refinery and pipeline compressors, steel mill blowers, ship propulsion units and marine auxiliaries, turbine generators, IMO pumps, worm gearing, planetary gearing and diesel engine turbochargers.

Send today for 48-page booklet—"Men, Machines and Materials at DE LAVAL."

De Laval Steam Turbine Company
860 Nottingham Way, Trenton 2, New Jersey

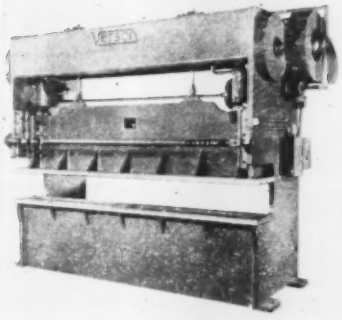
NEW PRODUCTS and equipment

horizontally or by dropping the free line away from the power line—the free trolley then moves by gravity or by manual operation.

Speeds up to 50 fpm can be obtained. *Write*: Rapistan-Keystone Co., Inc., 21751 W. Eight Mile Rd., Detroit, Mich. *Phone*: Kenwood 4-7600

Large Bed Area Featured

A gang punching machine for light tonnage has a large bed and ram area. It provides a capacity of 60 tons and is equipped with elec-



tric pushbutton clutch control, automatic lubricating system, and air counterbalance of the ram.

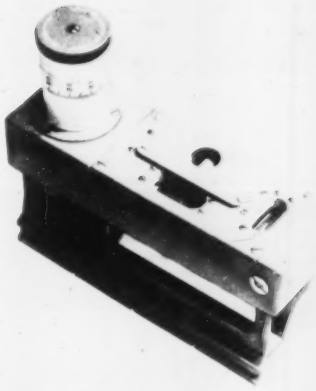
Stroke is 4 in. with 4 in. of ram adjustment (power driven). Shut height is 14 in., bed and ram area is 20 x 132 in., and operating speed is 45 strokes a minute. *Write*: Verson Allsteel Press Co., 9300 S. Kenwood Ave., Chicago 19, Ill. *Phone*: Regent 4-8200

Level Reads Rapidly

Critical leveling and measuring operations for flatness, straightness, and parallelism are performed accurately with the Griswold optical level.

Three bubble-phials are in the hinged top of the instrument. By observing them, deviations from the horizontal of 0.00012 in. per foot of length or 0.0001 in. per inch of length can be quickly determined.

Two prisms, arranged so that half images of opposite ends of the air bubble are viewed against each other, provide twice the separation that would ordinarily be indicated by only one end. *Write*: F. T. Griswold Mfg. Co., 315 W. Lancaster Ave., Wayne, Pa. *Phone*: Murry 8-4080

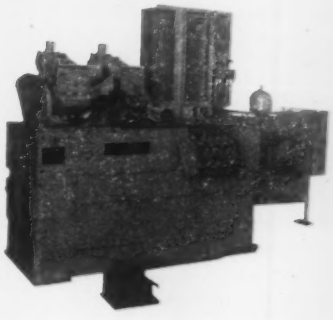


Flash Welder Automatic

The 400 KVA-F5 automatic flash-welder handles hot-rolled steel rings $\frac{3}{8}$ in. thick up to 8 in. wide, and flat stock.

Air operated, alligator-type clamps hold the work. An upset force of about 38,000 psi is derived from a double acting, hydraulic cylinder.

An electrical control panel with all necessary relays and timers con-



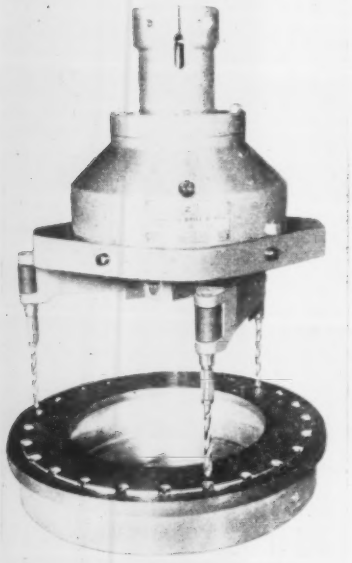
trols the functions of the hydraulic unit, as well as clamping, flashing, upset, weld power interruption, unclamping, and platen return. *Write*: Federal Machine & Welder Co., Warren, Ohio. *Phone*: 4-2521

Drill Head Adjustable

Adjustable multispindle drill heads accommodate from 2 to 10 spindles in sizes of 7, 10½, 12½, and 15½ in. Bolt circles up to 23 in. in diameter allow most hole patterns to be drilled or tapped within a given circle.

Spindle arms can be removed and replaced quickly. The head can be

NEW PRODUCTS and equipment

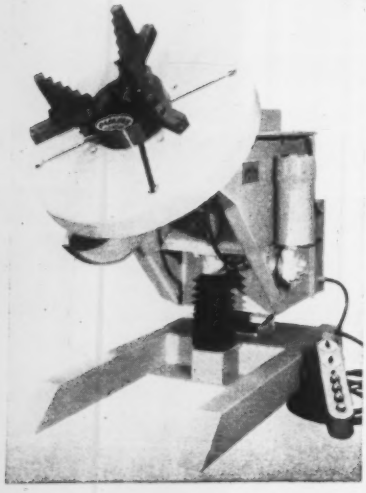


used on any standard drill press. It is a complete unit (no auxiliary equipment needed). *Write*: Zagar Inc., 24000 Lakeland Blvd., Cleveland 23, Ohio. *Phone*: Redwood 1-0500

Welding Speed Set Fast

Automatic arcwelding of various diameter cylinders at any required speed is accomplished fast by this 3000-lb capacity welding positioner.

The rotation drive and controls allow the operator to quickly set the rotative welding speed in inches per minute to the desired value. The system automatically correlates three variables—table speed, workpiece diameter, and welding speed. *Write*: Pandjiris Weldment Co., 5151 Northrup Ave., St. Louis 10, Mo. *Phone*: Prospect 6-6893



Grease for Multiservice

Mobilplex EP can be used in place of many special purpose greases.

It withstands extreme pressures, has long service life, is water resistant, and maintains chemical stability at temperatures from −150 to +300° F. It protects against rust and is compatible with other greases. *Write*: Industrial Lubricating Dept., Socony Mobil Oil Co. Inc., 150 E. 42nd St., New York 17, N. Y. *Phone*: Oxford 7-4200

Unit Converts Current

Any alternating current welding machine can be converted to direct current output with one of two portable converters.

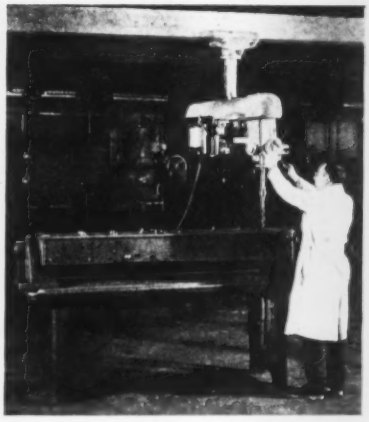
Model A2500C converts up to 250 amperes; Model A4500C, up to 450 amperes.

Each is a self-contained unit that can be placed on top of any welder, and only two connections are required with no need for auxiliary connections to a 110-volt line. *Write*: Welding Products Div., A. O. Smith Corp., Milwaukee, Wis. *Phone*: Uptown 3-3000

Drill Mounted on Track

An accessory permits mounting a 20-in. drill head on an overhead track. The setup is useful in drilling panels, sheets, plates, large work, or anywhere the workpiece is difficult to move.

The spindle may be positioned over any point within 10 in. of either side of the track anywhere along its length.

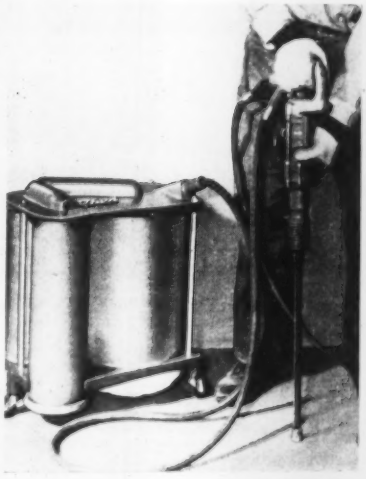


The accessory is a carriage and column which may be mounted with a standard 20-in. Delta drill head and its raising mechanism on a jib crane or similar type track. *Write*: Delta Power Tool Div., Rockwell Mfg. Co., 490 N. Lexington Ave., Pittsburgh 8, Pa. *Phone*: Churchill 1-8400

Drill Eliminates Dust

This air hammer provides a solution to dust problems in drilling concrete, brick, plaster, and other masonry.

Thor No. 15-DL utility drill sucks in drilling dust through hollow drilling steel. The dust moves out ports in the back head of the tool and into special extracting tanks.



The drill is teamed with the Thor No. 50 dust extractor which is mounted on a cart equipped with casters. *Write*: Thor Power Tool Co., Prudential Plaza, Chicago 1, Ill. *Phone*: Aurora 2-7601

NEW literature

Write directly to the company for a copy

Flexible Couplings

Bulletin No. 10100A covers latest additions to the line of Sure-Flex couplings. Revised tables include units with ductile iron flanges, and specially balanced couplings. T. B. Wood's Sons Co., Chambersburg, Pa.

Heat Treating Equipment

Bulletin No. 242 contains data on hardening, carbonitriding, and carburizing furnaces (batch and continuous). Lindberg Engineering Co., 2444 W. Hubbard St., Chicago 12, Ill.

Bronze Bushings

"Chemical and Physical Specifications of the Bronze Alloys" lists the various types most commonly used for bushings and bearings. It gives the alloy or ingot number, grade and properties of 24 alloys, and lists the military, SAE, Navy, aeronautical, ASTM, and federal specification comparatives for all these alloys. Renewal Service Inc., 17th and Lehigh Avenue, Philadelphia 32, Pa.

Stainless Steel Wire

A 20-page manual provides information on the use of stainless steel wire, its mechanical properties, and corrosion data. Tables list round wire weights, conversion of fractions to decimals and millimeters, and analyses of stainless steel types. Stainless Steel Div., Jones & Laughlin Steel Corp., Box 4606, Detroit 34, Mich.

Sponge Iron

A 20-page manual, Form No. 114, explains the use of sponge iron as melting stock, the analysis of sponge iron, carbon, and carbon potential —and the importance of purity. The role of sponge iron in quality steelmaking in the acid open hearth, basic open hearth, electric arc furnace, and high frequency furnace is covered in detail. Hoeganaes Sponge Iron Corp., Riverton, N. J.

Speed Reducers

"Shaft-Mounted Speed Reducers," booklet B-7238, discusses horsepower selection and ratings, dimensions, construction, installation, and maintenance of Moduline shaft-mounted units. Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30, Pa.

Conveyor Aid

A slide-card conveyor belt troubleshooter affords a quick way to locate probable causes of conveyor troubles and lists specific cures. Conveyor Products, Mechanical Goods Div., United States Rubber Co., Passaic, N. J.

Sling Chains

Bulletin DH-39 describes Kuplex sling chains in one, two, three, and four leg styles with sling, sling grab, and foundry type hooks. American Chain & Cable Co. Inc., 929 Connecticut Ave., Bridgeport 2, Conn.

Hand Screw Machine

This bulletin describes the Delta hand screw machine designed to cut costs associated with short production runs. Data on how to convert a standard Delta lathe to this type machine are included. Delta Power Tool Div., Rockwell Mfg. Co., 489 N. Lexington Ave., Pittsburgh 8, Pa.

Plain Grinders

Catalog B-571 describes 10-in. CH and 14-in. LCH plain cylindrical grinders. Specifications and work setups possible are given. Landis Tool Co., Waynesboro, Pa.

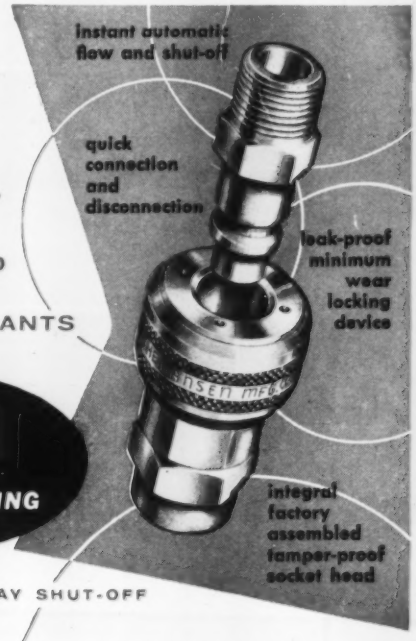
Welding Equipment

Folder DM-73 covers automatic and semiautomatic welding equipment, power sources, wire feed mechanisms, guns, heads, and controls for submerged arc and inert gas, shielded arcwelding. Hobart Bros. Co., Hobart Square, Troy, Ohio.

Thoroughly Proved...

BY YEARS OF HARD EVERYDAY USE IN THOUSANDS OF PLANTS

HANSEN QUICK-CONNECTIVE PUSH-TITE COUPLING


Instant automatic flow and shut-off
quick connection and disconnection
leak-proof minimum wear locking device
integral factory assembled tamper-proof socket head

ONE-WAY SHUT-OFF

Locking pins in Hansen Push-Tite Coupling Socket afford large area contact with Plug, thereby preventing wear and subsequent leakage.

The ability of Hansen Push-Tite Couplings to withstand severe service—with practically no maintenance—has been thoroughly proved by years of hard, everyday use in thousands of plants. The "socket head", which contains the locking device, is factory assembled into a rugged integral unit which cannot be readily injured or have component parts lost by casual tampering.

To connect the Coupling, you merely push the Plug into the Socket with one hand. Flow is instantaneous. To disconnect, push back sleeve on Socket—Coupling disconnects. Flow is shut off instantly and automatically.

QUICK-CONNECTIVE FLUID LINE COUPLINGS for

AIR • OIL • GREASE
HYDRAULIC FLUIDS • WATER
VACUUM • STEAM • OXYGEN
ACETYLENE • REFRIGERANTS
GASOLINE • COOLANTS

WRITE FOR THE HANSEN CATALOG

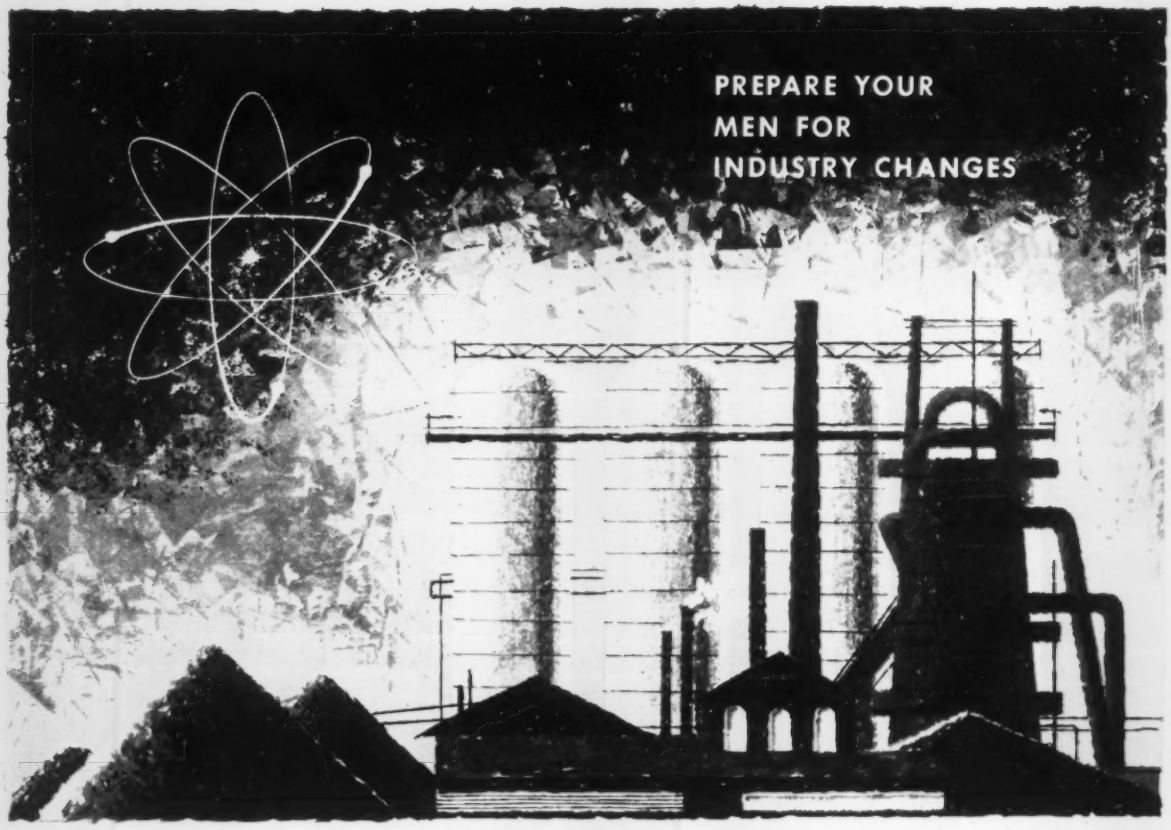
Here's an always ready reference when you want information on couplings in a hurry. Lists complete range of sizes and types of Hansen Quick-Connective Couplings. Write for your copy.

Representatives in Principal Cities

SINCE 1915 — QUICK-CONNECTIVE FLUID LINE COUPLINGS

THE HANSEN MANUFACTURING COMPANY

4031 WEST 150th STREET • CLEVELAND 35, OHIO



NEW
Steel Mill Techniques being advanced

Steel company engineers and supervisory personnel in management, operations and maintenance need the new "know-how" to keep pace with rapidly changing technology. The combination of technical sessions and exhibits offers a prime opportunity to "See and Hear" the latest scientific developments for a vast new era in steel. Learn how to do it better now!

NO ADMISSION FEE • NO REGISTRATION CHARGE

ASSOCIATION OF IRON AND STEEL ENGINEERS

1010 Empire Building Pittsburgh 22, Pa.

1958
IRON & STEEL EXPOSITION AND 1958 IRON & STEEL CONVENTION CLEVELAND AUDITORIUM SEPT. 23-26

COVER BOTH IN ONE TRIP!

Special Greyhound Charters available—your plant to show and return.

Market Outlook

Buyers To End Inventory Cutbacks

STEEL INVENTORIES will bottom out by the end of the month.

In spite of vacations in the major consuming industries, stocks were cut substantially last month. Industry researchers estimate that consumption exceeded shipments by at least 500,000 tons. Analysts of one company say the July reduction (nearly 2 million tons) was the greatest of any month since liquidation began.

Although there's a wide divergence of opinion on the rate of inventory reduction, most observers agree on two points:

1. Liquidation started in May or June of 1957, when consumers had about 24 million tons of steel.

2. It will end at about 12 million tons because users won't risk keeping less than a two-month supply. (September-October consumption is expected to be 12 million tons.)

Shipments should about equal consumption during August. By the end of the month, consumers will have their inventories where they want them.

SEPTEMBER BUILDUP?—There's little likelihood of an immediate switch from reduction to accumulation, but one expert thinks consumers will have to add 300,000 tons to their stocks during September just to maintain a 60-day inventory. He looks for a 500,000-ton buildup in October as automotive production moves into high gear. Another half million tons will be added during November and December, he believes.

GROUNDS FOR OPTIMISM—Asked his reasons for thinking that steel users will pad inventories, the market analyst replies: "Predictions that the automotive industry will build only a million cars during the fourth quarter are ridiculous. I expect production to hit 1,450,000. Construction activity is going strong again after faltering briefly, and the appliance business is on the upswing. About the only markets that don't look good are railroads and nonelectrical machinery."

PLATE INVENTORIES HEAVY—Three months ago, nearly a third of the participants in STEEL's quarterly survey of metal inventories said they had too many plates on hand. In the latest survey (see Page 121), 10 per cent of the light plate and 7 per cent of the heavy plate buyers say their stocks are excessive. They'll continue cutbacks during the third quarter.

AUTOMAKERS CAUTIOUS—Although they've placed sizable orders for steel to be used in 1959 models, automakers will keep close checks on their purchases until they have a contract with the UAW and proof that their cars are being well received. Dealers have fewer unsold cars than they had a year ago. By Sept. 1, their inventories should be between 275,000 and 300,000. Initial production runs of 300,000 units will fill up the pipelines. Then the industry can sit back and see how orders for '59s come in before revising production schedules.

ROAD MACHINERY ON UPGRADE— Makers of road building machinery are stepping up production and buying more steel. Caterpillar Tractor Co. will rehire about 1000 workers at its plants at Peoria, Decatur, and Joliet, Ill., this month. Clark Equipment Co., Buchanan, Mich., says sales of its construction equipment are the highest in five years.

OUTPUT EDGES HIGHER—The industry hiked its operating rate 3 points last week to 59 per cent of capacity. Production was about 1,593,000 net tons of steel for ingots and castings. July's output (6.5 million tons) made it the third best month of the year. Higher production is strengthening the scrap market. STEEL's composite on the prime grade jumped to $40.33 a ton, up $2.66.

WHERE TO FIND MARKETS & PRICES

	News	Prices
Bars, Merchant	122	131
Reinforcing	148	132
Clad steel	...	135
Coke	...	137
Coal Chemicals	...	137
Charts:		
Finished Steel	...	129
Ingot Rate	128	...
Scrap Prices	...	141
Comparisons	...	129
Contracts Placed	139	...
Contracts Pend.	139	...
Electrodes	...	137
Fasteners	...	134
Ferroalloys	128	138
Fluorspar	...	137
Footnotes	...	134
Imported Steel	...	137
Ingot Rates	128	...
Metal Powder	...	137
Nonferrous Met.	144	146
Ores	128	137
Pig Iron	128	136
Piling	...	131
Plates	127	131
Plating Material	...	147
Prestressed Strand	...	134
Price Indexes	...	129
Producers' Key	132	...
R.R. Materials	125	134
Refractories	...	137
Scrap	141	142
Semifinished	...	131
Service Centers	128	136
Sheets	123	132
Silicon Steel	...	133
Stainless Steel	127	135
Strip	123	133
Structurals	128	131
Tin Mill Prod.	...	133
Tool Steel	...	135
Tubular Goods	124	135
Wire	125	133

Introducing Allied's

IRILAC™ #1000

New Clear Protective Coating for All Metals . . . as safe and easy to handle as Water!

New method of protection incorporates corrosion inhibitors in a water-soluble polymer base. Dries to an extremely thin, tough, durable coating—clear in color. Does not chemically affect base metal or any post-treatments. Used as a protective treatment alone or to enhance value of post-treatments.

Allied's new Irilac #1000 is a concentrated solution of a water-soluble polymer with built-in complex corrosion inhibiting materials. It was developed to answer the needs of the metalworking industry for a non-conversion process that will provide corrosion resistance and resistance to fingerprinting and abrasion on base metals and electrochemically or chemically finished surfaces—without changing the appearance of the metallic surface.

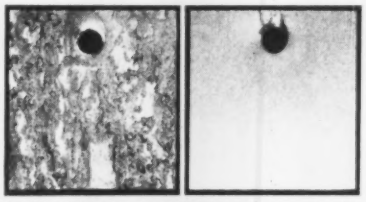
There are no hazards involved—Irilac is non-fuming, non-toxic, and requires no special fire prevention measures.

THE PROCESS

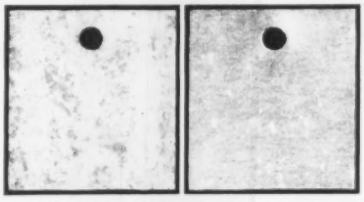
Irilac #1000 is diluted with water to provide a simple one-pass working solution. It is then applied by dip, brush or spray and forms a coating that quickly *bonds* to the metal surface without reacting with the surface.

THE PROPERTIES

The resulting coating is clear, transparent, thin yet durable. It has excellent water-resistant properties, and can be rubbed, handled and subjected to rough treatment. The surface to which Irilac has been applied is not altered—in fact, the transparent coating brings full tone to colored surfaces and clarity to iridescent surfaces. The water-thin physical characteristic of the solution means that the coating provides protection in recessed areas that are difficult, if not impossible, to protect with other methods.



STEEL PANELS: bare (left) and coated with Irilac (right) after 8-hour salt spray.



ALUMINUM PANELS: bare (left) and coated with Irilac (right) after 168-hour salt spray.

WHERE IRILAC CAN BE USED

Irilac #1000 can be applied to *any* metal—wet or dry—treated or untreated. All metals can be processed in *one* operation in the same solution. It can be applied in conjunction with any process—over Iridite, anodized, phosphated surfaces, black oxide, etc. Surfaces treated with Irilac provide a good base for paint.

APPLICATION ADVANTAGES

No other process or material available for the protection of metals offers all the application advantages found in new Irilac #1000:

1. It can be applied to any clean metal simply by dip, brush or spray. No special equipment is required.
2. Saves time—just apply and dry—no reaction time required.
3. No hazards involved—no exhaust or special fire protection equipment is required. Irilac is non-fuming and non-toxic.
4. Saves space. Presents no disposal problem. Low in first and final costs.

Because of its versatility and complete safety, Irilac has unlimited uses. For example, it will protect aluminum furniture, brass hardware and fixtures, steel parts of all types, zinc castings, etc. In fact, any base metal or plated surface, or those treated with electrolytic or chemical post-treatments, can be improved or enhanced with Irilac.

IRILAC #1000 MAY BE THE ANSWER TO YOUR PROTECTION PROBLEM

Our development staff will be glad to work with you to determine the significant benefits Irilac can offer you. Simply send us some parts and let us show you what Irilac can do. No obligation, of course.

Allied Research Products, Inc.

4004-06 EAST MONUMENT STREET
BALTIMORE 5, MARYLAND

***Manufacturers of* IRIDITE®, IRILAC™, ARP® Brighteners and Plating Chemicals**
West Coast Licensee: L. H. Butcher Co.

STEEL
QUARTERLY SURVEY

MILL PRODUCTS	CURRENT INVENTORIES					4th Quarter FORECAST		
	UNDER 10 DAYS	10-30 DAYS	30-60 DAYS	60-90 DAYS	3-6 MONTHS	LOWER	SAME	HIGHER
HOT-ROLLED CARBON BARS	5%	23%	46%	15%	11%	22%	64%	14%
COLD-FINISHED BARS	1%	18%	52%	16%	13%	17%	69%	14%
H & C-R SHEETS, STRIP	11%	11%	55%	18%	5%	16%	73%	11%
LIGHT PLATES	10%	12%	40%	26%	12%	29%	62%	9%
HEAVY PLATES	13%	6%	42%	29%	10%	27%	66%	7%
STRUCTURAL SHAPES	13%	22%	40%	9%	16%	22%	62%	16%
COPPER & BRASS	13%	23%	37%	20%	7%	8%	68%	24%
ALUMINUM	15%	10%	57%	17%	1%	8%	74%	18%

FIGURES are percentages of respondents to STEEL's quarterly survey.
COLOR UNDERSCORED figures show how most respondents reported.

Inventory Reduction Tapers Off

Users of nonferrous metals stop trimming supplies. They'll build stocks in next quarter. Most steel buyers say their stocks are satisfactory for current needs

CUTBACKS in nonferrous inventories have skidded to a stop. They're slowing in most steel products. Buyers of virtually all mill items are more satisfied with supplies today than they were three months ago. That's what STEEL's third quarter survey of metal inventories shows.

For the first time since 1956, the number of buyers intending to add to their supplies of copper, brass, and aluminum is greater than the total expecting to cut back.

Six months ago (STEEL, Feb. 3, p. 159), 28 per cent of nonferrous purchasers said they planned inventory cuts in the next quarter, while 6 per cent expected to build stocks. In the second quarter (STEEL, May 5, p. 125), 21 per cent predicted a drop within the next three months, while 9 per cent planned an increase.

Trend Changes—Only 8 per cent of nonferrous buyers think their stocks will be lower three months from now. Eighteen per cent of aluminum purchasers and 24 per cent of copper and brass users believe they will be higher.

Steel buyers have not completed inventory reductions in hot-rolled bars, plates, and structurals, although they're nearing satisfactory levels in cold-finished bars, sheets, and strip. Only in hot-rolled bars has the percentage of buyers planning further reductions in stocks increased since the most recent STEEL survey, and the gain is a slender 3 per cent.

Overstock Is No Problem—Fabricators of structural shapes made excellent progress in the last three months in reducing topheavy inventories. In May, a hefty 24 per cent said they had more than they wanted. Now, only 10 per cent believe their inventories are "too high."

Buyers of other products are equally pleased with their inventory levels. In May, 30 per cent of plate fabricators said their stocks were too high for comfort. Now 8 per cent think they're too high. Almost all of these buyers believe lingering overstocks will be corrected by the beginning of the fourth quarter.

Three months ago, 21 per cent of all steel buyers said their inventories were overly large. Now, that

proportion has dropped to 9 per cent. Only 7 per cent of nonferrous metal buyers think they have too much.

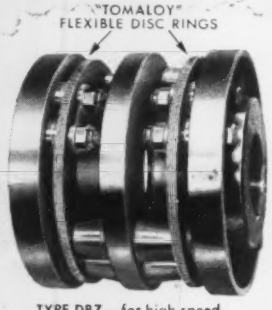
Signs of Business Gains—Significantly, there are no major changes since May in the levels of current inventories. Many firms thought 60 to 90 days' supply of metal was "too much" in May when they faced a dull summer. A major proportion of this group have the same tonnage now, but they aren't complaining. They predict that consumption of metal will gain in the third or fourth quarter.

Here's how some purchasers view inventory levels: A midwestern buyer for a major appliance manufacturer said he had too many cold-finished bars in May when the firm held 30 days' inventory. That buyer has the same amount of stock now, but he considers it satisfactory in view of a possible pickup in appliance production.

Three months ago, an eastern aluminum fabricator said 45 days' supply was too much. Now the same inventory is considered satisfactory, and the firm expects to build its stocks in the next quarter.

A California buyer of plates with 60 days' supply in May intended to cut back in June. That purchasing agent now considers 60 days' supply to be "about right" in view of business conditions.

Outlook Bright—With little displeasure over the state of inventories, and with deliveries generally satisfactory, purchasing agents look to the next quarter with a growing measure of confidence.



TYPE DBZ — for high speed, heavy duty drives

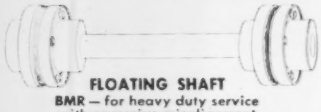
PROTECT

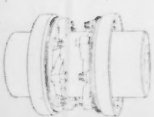
YOUR INVESTMENT IN PUMPS, COMPRESSORS and OTHER DRIVES BY USING

THOMAS FLEXIBLE COUPLINGS

NO LUBRICATION
NO MAINTENANCE
NO WEARING PARTS

There is a "Thomas" Coupling for every purpose.


FLOATING SHAFT
BMR — for heavy duty service with excessive misalignment


DOUBLE FLEXING
AMR — for engine and medium speed drives

SINGLE FLEXING
SS — for engine-driven generator sets with out-board bearings

Future maintenance costs and shutdowns are eliminated when you install Thomas Flexible Couplings. These all-metal couplings are open for inspection while running.

They will protect your equipment and extend the life of your machines.

Properly installed and operated within rated conditions, Thomas Couplings should last a lifetime.

UNDER LOAD and MISALIGNMENT ONLY THOMAS FLEXIBLE COUPLINGS OFFER ALL THESE ADVANTAGES.

1 Freedom from Backlash Torsional Rigidity
2 Free End Float
3 Smooth Continuous Drive with Constant Rotational Velocity
4 Visual Inspection While in Operation
5 Original Balance for Life
6 No Lubrication
7 No Wearing Parts
8 No Maintenance

THOMAS

Write for engineering catalog 51A, and the name of your nearest Thomas representative

THOMAS FLEXIBLE COUPLING COMPANY
WARREN, PENNSYLVANIA, U.S.A.

Steel Bars . . .

Bar Prices, Page 131

While still sluggish, commercial bar business is a trifle better than it was, though there is no important emphasis on automotive needs as yet and little demand from the railroads.

The more popular sizes of bars can be had for early shipment; deliveries on the not too popular sizes are rather extended. For instance, bar size angles can be had within two to three weeks, but certain sizes of bar flats are difficult to obtain under five to six weeks.

The answer is that mill production is concenerated more on the sizes in best demand, leaving the less popular tonnage to be worked into schedules when there is sufficient accumulation to warrant a rolling.

Venders Active — Auto suppliers are ordering more bars. A Detroit producer says venders seem to be feeling their way into the market. He has orders for cold drawn bars to be delivered in mid-August and September. The increase in activity is reflected in a sharp reduction in another barmaker's inventory, down to 6000 tons from 10,000.

"We can't pinpoint the improvement," says a cold-drawn producer at Pittsburgh, "but business is definitely on the upswing. We booked more orders in July than we did in June, and we're encouraged by the outlook for August. One of the Chrysler Corp.'s suppliers came in recently to increase the tonnage it will take next month. Most of the automotive business so far has been for parts that are repeats of those used in the '58 models."

May Build Stocks—The threat of

trouble in the Mideast doesn't seem to have accelerated bar purchases to any noticeable extent. Users, though, will be inclined to build up inventories should the trouble continue.

Makers of road building machinery are expanding their operations and are buying more steel. Caterpillar Tractor Co. announced it will rehire about 1000 workers at its plants at Peoria, Decatur, and Joliet, Ill., in August, and it hopes to recall more before the end of the year. Caterpillar has finished planned reductions in inventory and deems it advisable to keep production matching sales.

Clark Equipment Co. reports that sales of its Construction Equipment Div. are the highest since the unit was formed five years ago.

Buying Holding — Steel buying for farm equipment is holding up well even though this is the season when manufacturing activity tapers.

Appliance buying of steel is looking a little better.

Bliss & Laughlin Inc., Harvey, Ill., maker of cold-finished bars, reports its backlog of unshipped orders continues at a low level. But the company is encouraged by the upward trend indicated by the pattern of new orders for third quarter delivery. A slow but steady rise in operations is expected the rest of this year.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 132 & 133

Automotive suppliers have followed the carbuilders into the steel market and are asking for tonnage to be delivered from mid-August through September. The steel is for October production needs, and mill sources indicate that tonnages are about equal to those placed at this time a year ago. It's expected that mid-August releases will show a pickup in shipments.

Activity in autos and some uncertainty about defense needs are sparking a small increase in orders from other consuming lines. More orders from appliance makers are noted. Detroit mills say orders show a 20 to 25 per cent pickup in tonnage for September shipment.

At Detroit, most of the action is in cold rolled, particularly strip. There seems to be relatively few orders for hot-rolled sheets there, but one district mill says it has some commitments scheduled for early August release. Over-all, automotive demand for sheets is described as the best since January. Some mills think they have orders for about 75 per cent of automakers' September requirements.

"We'll ship a lot more sheets in August than we did in July but not as many as a year ago," a Pittsburgh district mill predicts. It already has booked more cold-rolled sheets for August than it entered in June.

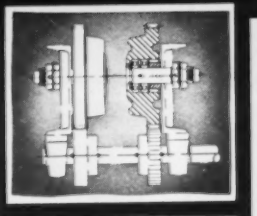
Sheet orders in New England are building up to about the June rate for August shipment. The July slump there was less than had been expected. Prompt delivery is usually stressed indicating that consumers' inventories are low. At St. Louis, prospects are improving. Farm implement business there is fairly substantial, and a pickup in miscellaneous manufacturing demand is indicated.

Galvanized sheets continue to move actively into consumption.

as MAINTENANCE FREE as CRANES can be...

ABELL-HOWE
UNDERHUNG CRANES
now with
FORGED ALLOY STEEL WHEELS, GEARS and PINIONS

Only Abell-Howe offers you forged steel dependability at all critical points of wear —wheels, gears *and* pinions! Furthermore, Abell-Howe rugged outrigger construction keeps bridge in square—provides lateral bracing for bridge girder. Smooth fluid drive provides cushioned starts whatever the load—reduces reversing shocks. To further assure smooth operation and lasting service, anti-friction bearings used throughout—with double row ball bearings in end truck wheels. Here's crane value that can't be beat!



another ABELL-HOWE *plus*
"QUICKLOCK" WHEEL ASSEMBLIES

Combine positive wheel mounting with immediate removability. To remove axle, simply loosen two nuts, twist axle 90° and pull it out. Wheels, too, are as easily removed with no dismantling of truck frame. "QUICKLOCK" is exclusive with Abell-Howe.

Ask for BULLETIN

ABELL-HOWE COMPANY *7757 W. Van Buren St., Forest Park, Illinois*

Shipments of Tubular Products

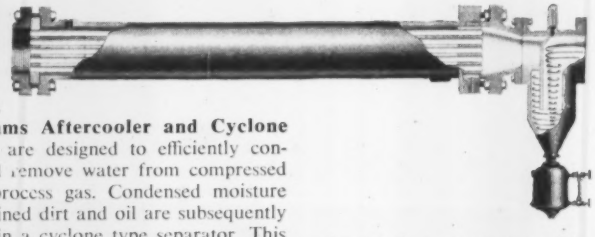
(Net tons, all grades)

Products	May, 1958 Shipments Domestic	May, 1958 Shipments Exports	Shipments First Five Months, 1958 Domestic	Shipments First Five Months, 1958 Exports
Seamless				
Standard pipe	22,506	1,159	112,932	7,215
Oil country goods	45,349	6,653	357,578	58,800
Line pipe	37,390	3,284	147,110	19,335
Mechanical tubing	23,894	167	132,930	1,238
Pressure tubing	13,604	598	72,552	2,542
Totals	142,743	11,861	823,102	89,130
Lapweld:				
Standard pipe	5,617	82	23,976	218
Oil country goods (a)	.....	.....	.....	.....
Line pipe (a)	.....	.....	.....	.....
Totals (b)	6,503	267	31,190	595
Buttweld:				
Standard pipe	158,412	1,936	642,075	7,322
Oil country goods (a)	.....	.....	.....	.....
Line pipe (a)	.....	.....	.....	.....
Totals (b)	179,067	2,228	730,545	10,113
Electricweld:				
Standard pipe	9,264	9	23,414	511
Oil country goods	9,844	356	61,546	1,614
Line pipe	184,403	17,463	578,800	186,933
Mechanical tubing	13,855	134	70,348	924
Pressure tubing	6,303	66	31,209	394
Totals	223,669	18,028	765,317	190,376
Gasweld & Spiralweld:				
Oil country goods (a)	.....	.....	.....	.....
Line pipe	6,304	373	29,777	4,263
Mechanical tubing (a)	.....	.....	.....	.....
Totals	7,660	373	36,140	4,367
Total:				
Standard pipe	195,799	3,186	802,397	15,266
Oil country goods	57,159	7,009	425,820	60,518
Line pipe	246,890	21,583	840,531	213,631
Mechanical tubing	39,887	315	213,785	2,230
Pressure tubing	19,907	664	103,761	2,936
Grand Total	559,642	32,757	2,386,294	294,581

(a) Withheld to avoid disclosing figures of individual companies.
(b) Includes mechanical tubing.
Data from the American Iron & Steel Institute.

Aftercooler and Cyclone Separator designed for cleaner, dryer compressed air

R. P. ADAMS CO., INC.
222 East Park Drive, Buffalo 17, New York



The Adams Aftercooler and Cyclone Separator are designed to efficiently condense and remove water from compressed air and process gas. Condensed moisture and entrained dirt and oil are subsequently removed in a cyclone type separator. This unit is scientifically designed for maximum removal efficiency over a wide range of flow rates.

For normal use, units are available to cool gases to within 10° F of the temperature of the cooling water. Specially designed units are available to permit a 2° F approach to cooling water temperature, for application where low moisture content is critical.

Adams Aftercoolers and Separators are available from stock to handle 20 - 40,000 cfm with 10° cooling and 25 - 19,200 cfm where it is necessary to cool within 2°F of the cooling water. Special units can be supplied to suit an unlimited range of requirements. In all cases the maximum pressure loss at rated capacities is ½ psi.

This wide range of sizes enables the economical utilization of Adams Aftercoolers and Separators in virtually all industrial application. For further information on how R. P. Adams' units will solve your compressed air problems and save you money, write today for Bulletin 711.

and no halt in the tonnage movement is sighted.

Tubular Goods . . .

Tubular Goods Prices, Page 135

Volume of July shipments of mechanical tubing were about the same as June's, reports a Pittsburgh district seller. Demand has been so intermittent that it's hard to detect a trend. To date, there has been no improvement in automotive requirements.

"There's a note of urgency in the orders we're getting," says the manager of pressure tube sales for one mill. "Most of our customers are buying on a hand-to-mouth basis, gambling on our ability to deliver within ten days or two weeks.

"If their purchases are indicative of the business they're doing, the over-all situation isn't good. Little or no hedging is being done, and speculation that a second round of hedging might develop is wishful thinking, we believe."

Pressure tubing is making a better showing than mechanical tubing, because of renewed activity among boiler manufacturers.

Three plants of U. S. Steel Corp. will share in the production of a new order for 85,500 tons of gas pipe. The order was placed by the Natural Gas Pipeline Co. of America Inc., which is building a 490-mile pipeline from Oklahoma to the Chicago area. About half the order, 43,000 tons of 36-in. pipe, will be produced at the National Tube Div.'s McKeesport (Pa.) Works. Other units of the corporation will turn out 25,000 tons at Orange, Tex., and 17,500 tons at Provo, Utah.

A new laboratory for research on tubes is in operation at Youngstown Sheet & Tube Co., Youngstown. It's equipped for making tensile strength, tension compression, brittleness, fatigue failure, corrosion fatigue, and hardness tests. Apparatus includes a metallographic microscope. The lab is also equipped to make experimental melts of steel. Higher pressures in natural gas pipelines, deeper oil well drilling, and other problems are making it necessary to produce higher quality pipe.

Wire . . .

Wire Prices, Pages 133 & 134

Wire order volume hit bottom in July. Bookings will be heavier this month; already a smattering of buying for September delivery is reported.

Tonnagewise, construction requirements lead demand, but inquiries for manufacturers wire are rising, coming from a wide range of consumers, including automotive. Heading wire demand shows spotty improvement; also wire for upholstery-furniture coils. Users of the latter did more hedge buying in June than most consumers.

Inventories of many industrial users are low, and normal improvement in fabricated wire goods manufacturing by Labor Day should raise the pressure for wire deliveries. The wiremakers have been operating with reduced crews and some of them may experience some difficulty meeting a sudden bulge in prompt shipment demand.

Two new items are being added to the product list of the Fairfield (Ala.) Works of U. S. Steel's Tennessee Coal & Iron Div. Facilities are being installed for production of high tensile tying wire and ACSR core wire. The tying wire is used in industrial packaging, the core wire in the manufacture of electrical transmission cables.

Production of tying wire started Aug. 1, and core wire production will start within the next two months. Both items are produced on rolling and drawing facilities used in the manufacture of other types of wire. But some changes and additions to auxiliary equipment were necessary, including a patenting furnace.

Inquiry for spring wire shows improvement. Automotive requirements are increasing and general manufacturing demand is better. It is increasingly apparent that consumers' inventories are at rock bottom in a growing number of cases. Some producers report inquiry being received from customers who have been out of the market for six months or so.

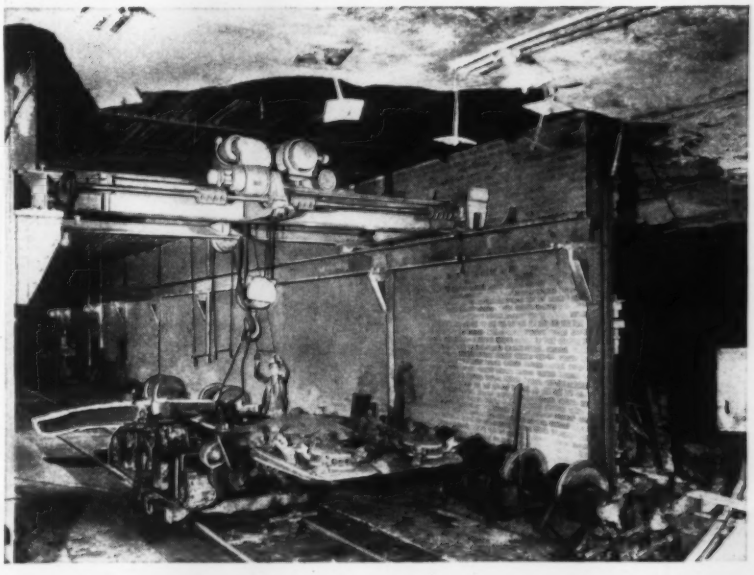
Rails, Cars . . .

Track Material Prices, Page 134

Not much buying of steel for the construction of railroad freight cars

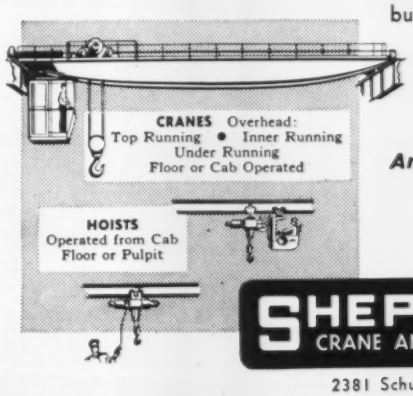
SHEPARD NILES
CRANE

Moving loads through the air
350 FT. UNDERGROUND



WHEREVER YOU GO you're likely to find through-the-air handling in use . . . even 350 ft. underground. This Shepard Niles Crane, for example, is installed in a coal mine's underground machine shop. The 19 ft. 6½ in. span welded beam crane aids in the repair of equipment, providing a swift, safe, economical method of handling.

Why not put your plant's handling overhead . . . out of the way . . . with a Shepard Niles Crane. Shepard offers you a complete line of cranes for light, medium or heavy service . . . designed for constant or intermittent duty in slow, medium and high speeds. Operated from pulpit, cab or floor, these Shepard cranes are composed of component parts built expressly for crane service.



Send for Bulletin illustrating Shepard Niles Cranes—and ask to have our representative call.

America's Most Complete Line of Cranes and Hoists Since 1903

SHEPARD NILES
CRANE AND HOIST CORPORATION
2381 Schuyler Ave., Montour Falls, N. Y.

Quantity
PRODUCTION
of
GREY IRON CASTINGS
ONE OF THE NATION'S
LARGEST AND MOST MODERN
PRODUCTION FOUNDRIES
ESTABLISHED 1866
THE WHELAND COMPANY
FOUNDRY DIVISION
MAIN OFFICE AND MANUFACTURING PLANTS
CHATTANOOGA 2, TENNESSEE

is expected the rest of this year. Steelmakers figure the carriers won't make many commitments until Congress completes legislation aimed at aiding the railroad industry.

Electro-Motive Div., General Motors Corp., LaGrange, Ill., will build 192 of the 268 diesel locomotives which the Norfolk & Western has ordered. The remainder went to Alco Products Inc., Schenectady, N. Y. Deliveries will begin in October, with Electro-Motive supplying 12 units each month and Alco four.

Stainless Steel . . .

Stainless Steel Prices, Page 135

"We've had a decided pickup in releases from Detroit," reports a stainless strip producer at Pittsburgh. "Orders started coming in about two weeks before the Middle East flareup, so we're not buying the idea that automotive purchases were moved up on account of the international situation."

Strip orders for August and September are described as "nice" by most makers. It's believed that automotive buying will approximate last year's volume. One producer expects its August bookings to exceed June's. Demand for sheets, bars, and plates continues weak.

Aircraft orders received last week by a Pittsburgh mill were the best it has received from that consuming outlet in months. The pickup in buying is thought to reflect military procurement decisions that were made last fall in the wake of the sputnik launchings.

Four sellers share one of the largest orders of stainless steel in years. The defense project, involving 800,000 lb plates, sheets, shapes, and bars, was reported placed last week.

Plates . . .

Plate Prices, Page 131

Plate order volume is disappointing. There has been little gain in tonnage over the last several weeks, but there will probably be some increase in buying and shipments may be a little more active this month.

Producers of sheared plates do not anticipate much improvement until fall, and any important gain at that time may depend upon a turn in oil and gas line requirements and a general betterment in heavy industrial equipment needs. Most sellers do not look for much demand on railroad equipment account in the immediate future.

Fabricating shop operations should pick up as mass vacations end. Also, metalworking activities in general should soon begin to rise seasonally and bring out a heavier demand for plates.

So far this year tankwork has been well below 1957's. One eastern fabricator estimates its business is off as much as 50 per cent. Oil storage requirements have been lighter, and there has been a drop in demand for the larger water tanks. Municipal water tank jobs have held up fairly well, but there has been a noticeable falling off in industrial needs. Small tankshops are fairly busy; some of them report their light plate inventories have been pretty well worked off.

Contrary to the situation a year ago, tankmakers are having no difficulty getting their steel needs filled promptly. Steel supply was their chief problem a year ago; today, it's new orders.

New England fabricating shops are holding back steel orders until they are assured their estimates on pending work are accepted. Then they are asking mills for prompt deliveries. Slightly more tonnage is being figured in the area, but competition among district fabricators is keen, and prospective higher costs of plain material are getting little consideration in estimates.

Direct purchasing for naval shipyards is somewhat heavier for the third quarter, including special treatment and low alloy plates.

Steel Product Shipments—May, 1958

(Net tons; all grades)

Products	May Shipments—Carbon	May Shipments—Alloy	May Shipments—Stainless	First Five Months—1958	First Five Months—1957
Ingots	11,991	9,324	1,417	121,910	223,744
Blooms, etc.	67,365	20,664	1,306	463,130	1,154,152
Tube rounds	445	38	5	3,281	39,732
Skelp	8,029	.....	.....	37,903	78,785
Wire rods	71,448	480	439	322,833	436,728
Structurals	343,503	2,966	16	1,655,819	2,864,659
Steel piling	41,442	22	.....	169,605	248,614
Plates	372,851	28,571	2,214	2,248,248	4,214,947
Rails—standard	68,018	.....	.....	274,652	620,398
Rails—other	4,884	.....	.....	17,101	40,296
Joint bars	2,971	.....	.....	17,911	42,673
Tie plates	7,776	.....	.....	58,568	138,589
Track spikes	3,428	.....	.....	18,678	38,188
Wheels	11,126	74	.....	79,531	164,255
Axles	5,469	5	.....	43,791	91,541
Bars—hot rolled	341,384	71,629	2,466	2,044,971	3,655,113
Bars—reinforcing	191,305	.....	.....	732,875	1,101,554
Bars—cold drawn	60,317	9,307	3,43.	387,013	631,282
Tool steel	580	4,980	.....	29,195	48,058
Standard pipe	198,879	105	1	817,663	1,237,238
Oil country goods	50,435	13,733	.....	486,338	1,343,819
Line pipe	268,470	3	.....	1,054,162	1,809,585
Mech. tubing	28,530	11,384	288	116,015	378,413
Pressure tubing	15,734	3,597	1,240	106,697	200,702
Drawn wire	198,592	1,947	1,809	895,343	1,168,218
Nails & staples	40,669	.....	1	170,940	201,445
Barbed wire	7,761	.....	.....	31,058	34,425
Woven fence	21,517	.....	.....	90,601	117,553
Bale ties	12,592	.....	.....	25,713	22,727
Black plate	50,400	.....	.....	256,428	320,458
Tin & terne plate, hot dipped	37,628	.....	.....	179,003	429,136
Tin plate, electrolytic	402,521	.....	.....	2,169,821	2,461,696
Sheets—hot	420,086	14,913	2,015	2,187,111	3,665,612
Sheets—cold	649,348	2,339	9,128	3,575,081	5,143,062
Sheets—galvanized	231,318	.....	.....	989,261	1,052,990
Sheets—other coated	10,457	.....	.....	62,119	87,364
Electrical sheets & strip	2,696	30,625	.....	181,514	300,403
Strip—hot rolled	67,765	1,198	554	355,209	662,426
Strip—cold rolled	54,231	2,055	9,241	375,208	530,908
Totals (1958)	4,383,961	229,959	35,579	22,952,300	.....
Totals (1957)	6,482,289	436,561	53,241	.....	27,001,488

Data from the American Iron & Steel Institute.

Ferroalloys . . .

Ferroalloy Prices, Page 138

New Jersey Zinc Co. has developed a new system for producing spiegeleisen from ore of its Ogdensburg, N. J., mine. Plans call for furnaces of commercial size, to be installed at Palmerton, Pa., but no definite date for starting construction has been set. Until the new system is placed in operation, the company's blast furnaces will continue to provide customers with spiegeleisen.

The new system has been developed by the company as a result of extensive tests over the last two years on a furnace based on principles of the company's Sterling process (electric arc furnace). It has not been revealed whether the new process will supplant the company's two blast furnaces, which have an annual rated capacity of 112,000 tons of spiegeleisen.

Pig Iron . . .

Pig Iron Prices, Page 136

August holds promise of some improvement in pig iron demand. Merchant sellers expect a pickup in orders with fewer foundries closed for vacations, but most of them think demand will be relatively sluggish until after Labor Day. Even then, volume may be slow developing. October is normally one of the best months of the year in pig iron sales.

At Buffalo, merchant iron sellers say demand still fails to reflect the improvement that has been taking place in the steel market. Most foundries in the district are on short workweeks, and their orders for castings are spotty.

Inventories of pig iron at merchant blast furnaces are being whittled down steadily, and some inactive furnaces will be relighted in coming weeks. Last week, Inland Steel Co. relighted its No. 4 blast furnace at Indiana Harbor and is now operating seven of its eight stacks. The Chicago district has 23 active stacks out of a total of 43.

Distributors . . .

Prices, Page 136

Steel warehousemen anticiapte an improvement in orders this month as operations at many metalworking plants resume following vacation suspensions. Brisk buying is not expected until fall, though the possibility of higher prices late this summer may stimulate some protective buying over the coming weeks.

Generally, business of the steel service centers is spotty. Plates and shapes are probably moving best. Increasing foreign competition in steel bars is reported. Lower extras, particularly size, often give foreign bar sellers an advantage.

The uncertain mideast situation hasn't been reflected to any extent in the distributors' market.

Some price shading has been going on, but improving activity in the over-all steel market is seen to be firming up warehouse quotations.

Structural Shapes . . .

Structural Shape Prices, Page 131

Fabricated structural steel bookings in June were the highest in 13 months, reports the American Institute of Steel Construction. Orders amounted to 286,798 tons, an increase of 62,490 over the preceding month and 16 per cent greater than in the same month last year.

First half (1958) bookings of 1,263,041 tons were 35 per cent lower than those in the corresponding period of 1957.

Shipments amounted to 329,240 tons during June, slightly better than in the previous month and 14 per

(*Please turn to Page* 139)

U.S. Imports of Iron Ore--1958

(Gross Tons)

Source	March, 1958 Tons	March, 1958 Value	First Quarter, 1958 Tons	First Quarter, 1958 Value
Brazil	61,610	$896,360	251,325	$3,603,086
British W. Africa	.....	.....	9,900	69,300
Canada	7,600	108,347	14,760	222,798
Chile	278,898	2,184,028	825,510	6,805,404
Denmark	.....	.....	49	1,099
Dominican Republic	10,500	140,175	21,000	297,675
Iran	.....	.....	2,461	166,881
Liberia	68,260	533,990	192,556	1,634,959
Mexico	15,272	46,015	53,435	161,007
Peru	91,016	695,405	414,718	3,535,051
Philippines	.....	.....	9,850	206,850
Sweden	.....	.....	83,277	1,173,606
United Kingdom	.....	.....	111	11,277
Venezuela	958,678	7,238,293	2,858,361	21,287,902
Totals	1,491,834	11,842,613	4,737,313	39,176,895

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

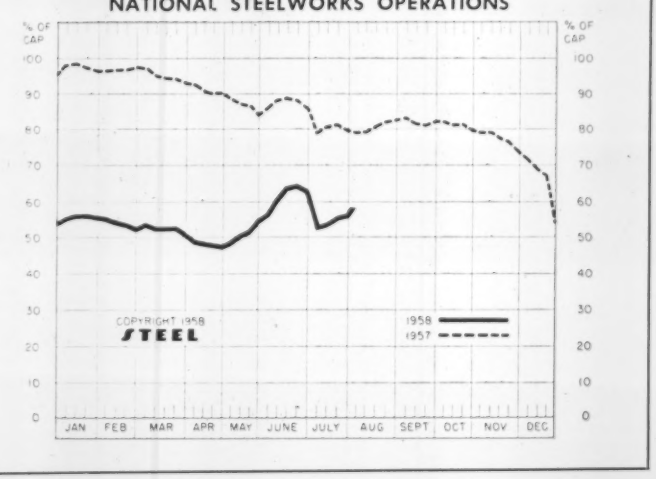
	Week Ended Aug. 3	Change	Same Week 1957	Same Week 1956
Pittsburgh	51.5	+ 2.5*	79.5	2
Chicago	63.5	+ 1.5*	83.5	8
Eastern	65.0	+ 2.0	85.5	25
Youngstown	53.0	+ 1.0	77	5
Wheeling	73.5	+ 2.5	72	54.5
Cleveland	54.0	+ 4.5*	79	0
Buffalo	50.0	+ 6.0	88	0
Birmingham	52.0	— 1.5	85.5	3.5
Cincinnati	41.0	+ 1.5	67.5	78.5
St. Louis	90.0	— 5.0	87	103
Detroit	61.0	+ 3.0*	90	48
Western	69.0	+ 2.0	99	30
National Rate	59.0	+ 3.0	79	19.5

INGOT PRODUCTION‡

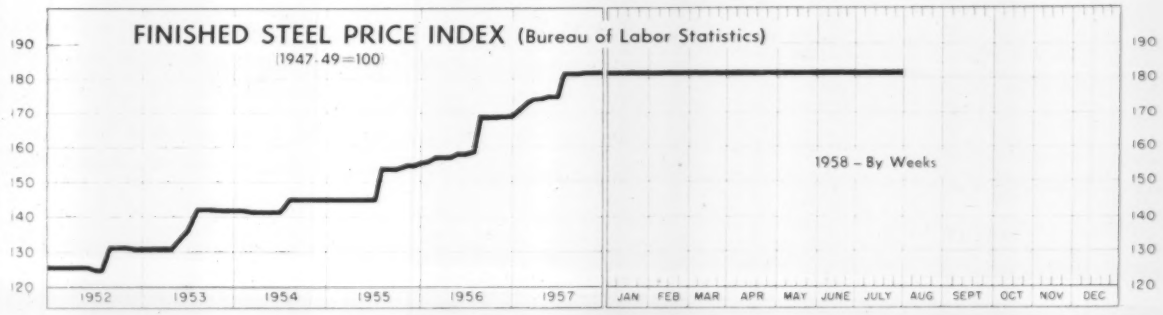
	Week Ended Aug. 3	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	98.7	96.2	85.7	126.6
NET TONS (In thousands)	1,586	1,546	1,376	2,033

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



July 29, 1958	Week Ago	Month Ago	July Avg	Year Ago
181.5†	181.5	181.5	181.5	181.5

†Preliminary

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended July 29

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.600	Bars, Reinforcing	6.135
Rails, Light, 40 lb	7.067	Bars, C.F., Carbon	10.360
Tie Plates	6.600	Bars, C.F., Alloy	13.875
Axles, Railway	9.825	Bars, C.F., Stainless, 302 (lb)	0.553
Wheels, Freight Car, 33 in. (per wheel)	60.000	Sheets, H.R., Carbon	6.175
Plates, Carbon	6.150	Sheets, C.R., Carbon	7.075
Structural Shapes	5.942	Sheets, Galvanized	8.270
Bars, Tool Steel, Carbon (lb)	0.535	Sheets, C.R., Stainless, 302 (lb)	0.688
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.650	Sheets, Electrical	12.025
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.355	Strip, C.R., Carbon	9.214
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.850	Strip, C.R., Stainless, 430 (lb)	0.493
Bars, H.R., Alloy	10.525	Strip, H.R., Carbon	6.075
Bars, H.R., Stainless, 303 (lb)	0.525	Pipe, Black, Buttweld (100 ft)	19.814
Bars, H.R., Carbon	6.425	Pipe, Galv., Buttweld (100 ft)	23.264
		Pipe, Line (100 ft)	199.023
		Casing, Oil Well, Carbon (100 ft)	194.499
		Casing, Oil Well, Alloy (100 ft)	304.610
		Tubes, Boiler (100 ft)	49.130
		Tubing, Mechanical, Carbon (100 ft)	24.953
		Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
		Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783
		Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483
		Black Plate, Canmaking Quality (95 lb base box)	7.583
		Wire, Drawn, Carbon	10.225
		Wire, Drawn, Stainless, 430 (lb)	0.653
		Bale Ties (bundles)	7.967
		Nails, Wire, 8d Common	9.828
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	July 30 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	239.15	239.15	239.15	239.15	189.38
Index in cents per lb	6.479	6.479	6.479	6.479	5.130

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$145.42	$145.42	$145.42	$146.19	$115.86
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	40.33	37.67	35.67	54.50	44.08

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130. †Revised.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	July 30 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.425	5.425	5.425	5.425	4.15
Bars, H.R., Chicago	5.425	5.425	5.425	5.425	4.15
Bars, H.R., deld. Philadelphia	5.725	5.725	5.725	5.715	5.302
Bars, C.F., Pittsburgh	7.30*	7.30*	7.30*	7.30*	5.20
Shapes, Std., Pittsburgh	5.275	5.275	5.275	5.275	4.10
Shapes, Std., Chicago	5.275	5.275	5.275	5.275	4.10
Shapes, deld., Philadelphia	5.545	5.545	5.545	5.585	4.38
Plates, Pittsburgh	5.10	5.10	5.10	5.10	4.10
Plates, Chicago	5.10	5.10	5.10	5.10	4.10
Plates, Coatesville, Pa.	5.10	5.10	5.10	5.50	4.35
Plates, Sparrows Point, Md.	5.10	5.10	5.10	5.10	4.10
Plates, Claymont, Del.	5.10	5.10	5.10	5.70	4.55
Sheets, H.R., Pittsburgh	4.925	4.925	4.925	4.925	3.925
Sheets, H.R., Chicago	4.925	4.925	4.925	4.925	3.925
Sheets, C.R., Pittsburgh	6.05	6.05	6.05	6.05	4.775
Sheets, C.R., Chicago	6.05	6.05	6.05	6.05	4.775
Sheets, C.R., Detroit	6.05	6.05	6.05	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.60	6.60	6.60	6.60	5.275
Strip, H.R., Pittsburgh	4.925	4.925	4.925	4.925	3.975-4.425
Strip, H.R., Chicago	4.925	4.925	4.925	4.925	3.925
Strip, C.R., Pittsburgh	7.15	7.15	7.15	7.15	5.45-5.95
Strip, C.R., Chicago	7.15	7.15	7.15	7.15	5.70
Strip, C.R., Detroit	7.15	7.15	7.15	7.25	5.45-6.05
Wire, Basic, Pittsburgh	7.65	7.65	7.65	7.65	5.475-5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.35-6.55
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$96.00	$96.00	$96.00	$96.00	$75.50
Wire rods 7/32-5/8" Pitts.	6.15	6.15	6.15	6.15	4.525

PIG IRON, Gross Ton	July 30 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	69.88	60.75
No. 2 Fdry, NevilleIsland, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.38	61.25
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld. Cin	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton	245.00†	245.00†	245.00†	255.00†	200.00*

†74-76% Mn, Duquesne, Pa. *Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$41.50	$37.50	$35.50	$56.50	$44.50
No. 1 Heavy Melt, E. Pa.	36.00	35.00	34.00	53.00	44.25
No. 1 Heavy Melt, Chicago	42.50	40.50	37.50	54.00	43.50
No. 1 Heavy Melt, Valley	43.50	41.50	36.50	54.50	45.50
No. 1 Heavy Melt, Cleve.	38.50	38.50	33.00	52.50	45.50
No. 1 Heavy Melt, Buffalo	27.50	27.50	26.50	46.50	43.75
Rails, Rerolling, Chicago	61.50	61.50	55.50	79.50	55.50
No. 1 Cast, Chicago	44.50	44.50	41.50	47.50	41.00

COKE, Net Ton					
Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75

THE CITY THAT DIDN'T EXIST A MONTH AGO

Every 30 days the U. S. adds as many new Americans as live in Norfolk, Va.—creating brand-new wants and needs which must be satisfied.

What does this mean to you? It means greater opportunities than ever before—in all fields. Home construction is expected to double by 1975. Power companies plan to increase output 250% in the next 20 years to provide the power for scores of new labor-saving devices. Clothing suppliers predict a one-third increase in 7 years.

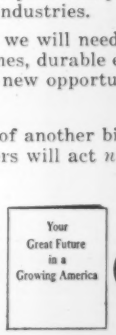
With 11,000 new citizen-consumers born every day, there's a new wave of opportunity coming.

7 BIG REASONS FOR CONFIDENCE IN AMERICA'S FUTURE

1. **More people** . . . Four million babies yearly. U. S. population has *doubled* in last 50 years! And our prosperity curve has always followed our population curve.
2. **More jobs** . . . Though employment in some areas has fallen off, there are *15 million* more jobs than in 1939—and there will be *22 million more* in 1975 than today.
3. **More income** . . . Family income after taxes is at an all-time high of $5300—is expected to pass $7000 by 1975.
4. **More production** . . . U. S. production *doubles* every 20 years. We will require millions more people to make, sell and distribute our products.
5. **More savings** . . . Individual savings are at highest level ever—*$340 billion*—a record amount available for spending.
6. **More research** . . . *$10 billion* spent each year will pay off in more jobs, better living, whole new industries.
7. **More needs** . . . In the next few years we will need *$500 billion* worth of schools, highways, homes, durable equipment. Meeting these needs will create new opportunities for everyone.

Add them up and you have the makings of another big upswing. Wise planners, builders and buyers will act *now* to get ready for it.

FREE! Send for this new 24-page illustrated booklet, "Your Great Future in a Growing America." Every American should know these facts. Drop a card today to: ADVERTISING COUNCIL, Box 10, Midtown Station, New York 18, N. Y.



(This space contributed as a public service by this magazine.)

Steel Prices

Mill prices as reported to STEEL, July 30, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill points indicate producing company. Key to producers, page 132; footnotes, page 134.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 .....$73.50

INGOTS, Alloy (NT)
Detroit S41 .....$77.00
Farrell,Pa. S3 .....77.00
Lowellville,O. S3 .....77.00
Midland,Pa. C18 .....77.00
Munhall,Pa. U5 .....77.00
Sharon,Pa. S3 .....77.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 .....$77.50
Buffalo R2 .....77.50
Clairton,Pa. U5 .....77.50
Ensley,Ala. T2 .....77.50
Fairfield,Ala. T2 .....77.50
Fontana,Calif. K1 .....88.00
Gary,Ind. U5 .....77.50
Johnstown,Pa. B3 .....77.50
Lackawanna,N.Y. B2 .....77.50
Munhall,Pa. U5 .....77.50
Owensboro,Ky. G8 .....77.50
S Chicago,Ill. R2, U5 .....77.50
S.Duquesne,Pa. U5 .....77.50
Sterling,Ill. N15 .....77.50
Youngstown R2 .....77.50

Carbon, Forging (NT)
Bessemer,Pa. U5 .....$96.00
Buffalo R2 .....96.00
Canton,O. R2 .....98.50
Clairton,Pa. U5 .....96.00
Conshohocken,Pa. A3 .....101.00
Ensley,Ala. T2 .....96.00
Fairfield,Ala. T2 .....96.00
Fontana,Calif. K1 .....105.50
Gary,Ind. U5 .....96.00
Geneva,Utah C11 .....96.00
Houston S5 .....101.00
Johnstown,Pa. B2 .....96.00
Lackawanna,N.Y. B2 .....96.00
LosAngeles B3 .....105.50
Midland,Pa. C18 .....96.00
Munhall,Pa. U5 .....96.00
Owensboro,Ky. G8 .....96.00
Seattle B3 .....109.50
Sharon,Pa. S3 .....96.00
S Chicago R2, U5, W14 .96.00
S.Duquesne,Pa. U5 .....96.00
S.SanFrancisco B3 .....105.50
Warren,O. C17 .....96.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 .....$114.00
Bridgeport,Conn. C32 .114.00
Buffalo R2 .....114.00
Canton,O. R2, T7 .....114.00
Conshohocken,Pa. A3 .121.00
Detroit S41 .....114.00
Economy,Pa. B14 .....114.00
Farrell,Pa. S3 .....114.00
Fontana,Calif. K1 .....135.00
Gary,Ind. U5 .....114.00
Houston S5 .....119.00
Ind.Harbor,Ind. Y1 .....114.00
Johnstown,Pa. B2 .....114.00
Lackawanna,N.Y. B2 .114.00
LosAngeles B3 .....134.00
Lowellville,O. S3 .....114.00
Massillon,O. R2 .....114.00
Midland,Pa. C18 .....114.00
Munhall,Pa. U5 .....114.00
Owensboro,Ky. G8 .....114.00
Sharon,Pa. S3 .....114.00
S.Chicago R2,U5,W14 .114.00
S.Duquesne,Pa. U5 .....114.00
Struthers,O. Y1 .....114.00
Warren,O. C17 .....114.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$117.50
Canton,O. R2 .....120.00
Cleveland R2 .....117.50
Gary,Ind. U5 .....117.50
S.Chicago,Ill. R2, W14 117.50
S.Duquesne,Pa. U5 .....117.50
Warren,O. C17 .....117.50

SKELP
Aliquippa,Pa. J5 .....5.075
Munhall,Pa. U5 .....4.875
Pittsburgh J5 .....5.075
Warren,O. R2 .....4.875
Youngstown R2, U5 .....4.875

WIRE RODS
AlabamaCity,Ala. R2 .....6.15
Aliquippa,Pa. J5 .....6.15
Alton,Ill. L1 .....6.35
Buffalo W12 .....6.15
Cleveland A7 .....6.15
Donora,Pa. A7 .....6.15
Fairfield,Ala. T2 .....6.15
Houston S5 .....6.40
IndianaHarbor,Ind. Y1 .....6.15
Johnstown,Pa. B2 .....6.15
Joliet,Ill. A7 .....6.15
KansasCity,Mo. S5 .....6.40
Kokomo,Ind. C16 .....6.25
LosAngeles B3 .....6.95
Minnequa,Colo. C10 .....6.40
Monessen,Pa. P7 .....6.15
N.Tonawanda,N.Y. B11 .6.15
Pittsburg,Calif. C11 .....6.95
Portsmouth,O. P12 .....6.15
Roebling,N.J. R5 .....6.25
S.Chicago,Ill. R2 .....6.15
SparrowsPoint,Md. B2 .6.25
Sterling,Ill. (1) N15 .....6.15
Sterling,Ill. N15 .....6.25
Struthers,O. Y1 .....6.15
Worcester,Mass. A7 .....6.45

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..5.275
Atlanta A11 .....5.475
Aliquippa,Pa. J5 .....5.275
Bessemer,Ala. T2 .....5.275
Bethlehem,Pa. B2 .....5.325
Birmingham C15 .....5.275
Clairton,Pa. U5 .....5.275
Fairfield,Ala. T2 .....5.275
Fontana,Calif. K1 .....6.075
Gary,Ind. U5 .....5.275
Geneva,Utah C11 .....5.275
Houston S5 .....5.375
Ind.Harbor,Ind. I-2 ..5.275
Johnstown,Pa. B2 .....5.325
Joliet,Ill. P22 .....5.275
KansasCity,Mo. S5 .....5.375
Lackawanna,N.Y. B2 ..5.325
LosAngeles B3 .....5.975
Minnequa,Colo. C10 ....5.575
Munhall,Pa. U5 .....5.275
Niles,Calif. P1 .....5.925
Phoenixville,Pa. P4 ....5.325
Portland,Oreg. O4 .....6.025
Seattle B3 .....6.025
S.Chicago,Ill. U5, W14 5.275
S.SanFrancisco B3 ....5.925
Sterling,Ill. N15 .....5.275
Torrance,Calif. C11 ....5.975
Weirton,W.Va. W6 ....5.275

Wide Flange
Bethlehem,Pa. B2 .....5.325
Clairton,Pa. U5 .....5.275
Fontana,Calif. K1 .....6.225
IndianaHarbor,Ind. I-2 5.275
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 .....5.275
Phoenixville,Pa. P4 ....5.325
S.Chicago,Ill. U5 .....5.275
Weirton,W.Va. W6 ....5.275

Alloy Std. Shapes
Aliquippa,Pa. J5 .....6.55
Clairton,Pa. U5 .....6.55
Gary,Ind. U5 .....6.55
Houston S5 .....6.65
KansasCity,Mo. S5 .....6.65
Munhall,Pa. U5 .....6.55
S.Chicago,Ill. U5 .....6.55

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 .....7.75
Bessemer,Ala. T2 .....7.75
Bethlehem,Pa. B2 .....7.80
Clairton,Pa. U5 .....7.75
Fairfield,Ala. T2 .....7.75
Fontana,Calif. K1 .....8.55
Gary,Ind. U5 .....7.75
Geneva,Utah C11 .....7.75
Houston S5 .....7.85
Ind.Harbor,Ind. I-2, Y1 7.75
Johnstown,Pa. B2 .....7.80
KansasCity,Mo. S5 .....7.85
Lackawanna,N.Y. B2 ...7.80
LosAngeles B3 .....8.45
Munhall,Pa. U5 .....7.75
Seattle B3 .....8.50
S.Chicago,Ill. U5, W14 ..7.75
S.SanFrancisco B3 ....8.40
Struthers,O. Y1 .....7.75

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....7.80
Lackawanna,N.Y. B2 ..7.80
Munhall,Pa. U5 .....7.75
S.Chicago,Ill. U5 .....7.75

PILING

BEARING PILES
Bethlehem,Pa. B2 .....5.325
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 .....5.275
S.Chicago,Ill. U5 .....5.275

STEEL SHEET PILING
Lackawanna,N.Y. B2 ..6.225
Munhall,Pa. U5 .....6.225
S.Chicago,Ill. U5 .....6.225
Weirton,W.Va. W6 ....6.225

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(15) A10 ....5.10
Atlanta A11 .....5.30
Bessemer,Ala. T2 .....5.10
Clairton,Pa. U5 .....5.10
Claymont,Del. C22 .....5.10
Cleveland J5, R2 .....5.20
Coatesville,Pa. L7 ....5.10
Conshohocken,Pa. A3 ..5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fontana,Calif.(30) K1 ..5.90
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.10
GraniteCity,Ill. G4 .....5.20
Harrisburg,Pa. P4 .....5.10
Houston S5 .....5.20
Ind.Harbor,Ind. I-2, Y1.5.10
Johnstown,Pa. B2 .....5.10
Lackawanna,N.Y. B2 ..5.10
LoneStar,Tex. L6 .....5.20
Mansfield,O. E6 .....5.10
Minnequa,Colo. C10 ....5.95
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Pittsburgh J5 .....5.10
Riverdale,Ill. A1 .....5.10
Seattle B3 .....6.00
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14 ..5.10
SparrowsPoint,Md. B2 ..5.10
Sterling,Ill. N15 .....5.10
Steubenville,O. W10 .....5.10
Warren,O. R2 .....5.10
Youngstown U5, Y1 .....5.10

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 .....6.75
Fontana,Calif. K1 .....7.55
Geneva,Utah C11 .....6.75
Houston S5 .....6.85
Johnstown,Pa. B2 .....6.75
SparrowsPoint,Md. B2 6.75

PLATES, Wrought Iron
Economy,Pa. B14 .....8.15

PLATES, H.S., L.A.
Aliquippa,Pa. J5 .....7.625
Bessemer,Ala. T2 .....7.625
Clairton,Pa. U5 .....7.625
Claymont,Del. C22 .....7.625
Cleveland J5, R2 .....7.625
Coatesville,Pa. L7 .....7.625
Conshohocken,Pa. A3 ..7.625
Economy,Pa. B14 .....7.625
Ecorse,Mich. G5 .....7.625
Fairfield,Ala. T2 .....7.625
Farrell,Pa. S3 .....7.625
Fontana,Calif.(30) K1 8.425
Gary,Ind. U5 .....7.625
Geneva,Utah C11 .....7.625
Houston S5 .....7.725
Ind.Harbor,Ind. I-2, Y1.7.625
Johnstown,Pa. B2 .....7.625
Munhall,Pa. U5 .....7.625
Pittsburgh J5 .....7.625
Seattle B3 .....8.525
Sharon,Pa. S3 .....7.625
S.Chicago,Ill. U5, W14 .7.625
SparrowsPoint,Md. B2..7.625
Warren,O. R2 .....7.625
Youngstown U5 .....7.625

PLATES, ALLOY
Aliquippa,Pa. J5 .....7.20
Claymount,Del. C22 .....7.20
Coatesville,Pa. L7 .....7.20
Economy,Pa. B14 .....7.20
Fontana,Calif. K1 .....8.00
Gary,Ind. U5 .....7.20
Houston S5 .....7.30
Ind.Harbor,Ind. Y1 .....7.20
Johnstown,Pa. B2 .....7.20
Lowellville,O. S3 .....7.20
Munhall,Pa. U5 .....7.20
Newport,Ky. A2 .....7.20
Pittsburgh J5 .....7.20
Seattle B3 .....8.10
Sharon,Pa. S3 .....7.20
S.Chicago,Ill. U5, W14..7.20
SparrowsPoint,Md. B2 ..7.20
Youngstown Y1 .....7.20

FLOOR PLATES
Cleveland J5 .....6.175
Conshohocken,Pa. A3 6.175
Ind.Harbor, Ind. I-2 .6.175
Munhall,Pa. U5 .....6.175
S.Chicago,Ill. U5 .....6.175

PLATES, Ingot Iron
Ashland c.l.(15) A10 5.35
Ashland l.c.l(15) A10 5.85
Cleveland c.l. R2 .....5.85
Warren,O. c.l. R2 .....5.85

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ...5.425
Aliquippa,Pa.(9) J5 ..5.425
Alton,Ill. L1 .....5.625
Atlanta(9) A11 .....5.625
Bessemer,Ala.(9) T2 ...5.425
Birmingham(9) C15 ....5.425
Buffalo(9) R2 .....5.425
Clairton,Pa.(9) U5 ....5.425
Cleveland (9) R2 ....5.425
Ecorse,Mich.(9) G5 ....5.425
Emeryville,Calif. J7 ....6.175
Fairfield,Ala.(9) T2 ....5.425
Fairless,Pa.(9) U5 ....5.575
Fontana,Calif.(9) K1 ....6.125
Gary,Ind.(9) U5 .....5.425
Houston(9) S5 .....5.675
Ind.Harbor(9) I-2, Y1..5.425
Johnstown,Pa.(9) B2 ..5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo.(9) S5..5.675
Lackawanna(9) B2 ....5.425
LosAngeles(9) B3 ....6.125
Midland,Pa.(23) C18 ...5.725
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ....5.875
Niles,Calif. P1 .....6.125
N.T'wanda,N.Y.(23)B11 5.775
Owensboro,Ky.(9) G8 ..5.425
Pittsburg,Calif.(9) C11..6.125
Pittsburgh(9) J5 .....5.425
Portland,Oreg. O4 ....6.175
Seattle B3, N14 .....6.175
S.Ch'c'go(9)R2,U5,W14 5.425
S.Duquesne,Pa.(9) U5..5.425
S.SanFran.,Calif.(9)B3 6.175
Sterling,Ill.(1)(9) N15..5.425
Sterling,Ill.(9) N15 ...5.525
Struthers,O.(9) Y1 ....5.425
Tonawanda,N.Y. B12 ..5.425
Torrance,Calif.(9) C11 ..6.125
Youngstown(9)R2, U5 ..5.425

BARS, H.R. Leaded Alloy
(Including leaded extra)
Warren,O. C17 .....7.475

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.475
Bethlehem,Pa. B2 .....6.475
Bridgeport,Conn. C32 ...6.55
Buffalo R2 .....6.475
Canton,O. R2, T7 .....6.475
Clairton,Pa. U5 .....6.475
Detroit S41 .....6.475
Economy,Pa. B14 .....6.475
Ecorse,Mich. G5 .....6.475
Fairless,Pa. U5 .....6.625
Farrell,Pa. S3 .....6.475
Fontana,Calif. K1 .....7.525
Gary,Ind. U5 .....6.475
Houston S5 .....6.725
Ind.Harbor,Ind. I-2, Y1 6.475
Johnstown,Pa. B2 .....6.475
KansasCity,Mo. S5 .....6.725
Lackawanna,N.Y. B2 ..6.475
Lowellville,O. S3 .....6.475
LosAngeles B3 .....7.525
Massillon,O. R2 .....6.475
Midland,Pa. C18 .....6.475
Owensboro,Ky. G8 .....6.475
Pittsburgh J5 .....6.475
Sharon,Pa. S3 .....6.475
S.Chicago R2, U5, W14 6.475
S.Duquesne,Pa. U5 ...6.475
Struthers,O. Y1 .....6.475
Warren,O. C17 .....6.475
Youngstown U5 .....6.475

BARS & SMALL SHAPES, H.R.
High-Strength, Low-Alloy
Aliquippa,Pa. J5 .....7.925
Bessemer,Ala. T2 .....7.925
Bethlehem,Pa. B2 .....7.925
Clairton,Pa. U5 .....7.925
Cleveland R2 .....7.925
Ecorse,Mich. G5 .....7.925
Fairfield,Ala. T2 .....7.925
Fontana,Calif. K1 .....8.625
Gary,Ind. U5 .....7.925
Houston S5 .....8.175
Ind.Harbor,Ind. Y1 .....7.925
Johnstown,Pa. B2 .....7.925
KansasCity,Mo. S5 .....8.175
Lackawanna,N.Y. B2 ..7.925
LosAngeles B3 .....8.625
Pittsburgh J5 .....7.925
Seattle B3 .....8.675
S.Chicago,Ill. U5, W14..7.925
S.Duquesne,Pa. U5 .....7.925
S.SanFrancisco B3 ....8.675
Struthers,O. Y1 .....7.925
Youngstown U5 .....7.925

BAR SIZE ANGLE; H.R. Carbon
Bethlehem,Pa.(9) B2 ..5.575
Houston(9) S5 .....5.675
KansasCity,Mo.(9) S5 ..5.675
Lackawanna(9) B2 ....5.425
Sterling,Ill. N15 .....5.525
Sterling,Ill.(1) N15 ....5.425
Tonawanda,N.Y. B12 ..5.425

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....5.425
Atlanta A11 .....5.625
Joliet,Ill. P22 .....5.425
Niles,Calif. P1 .....6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 ....6.175
SanFrancisco S7 .....6.275
Seattle B3 .....6.175

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.55
Clairton,Pa. U5 .....6.55
Gary,Ind. U5 .....6.55
Houston S5 .....6.80
KansasCity,Mo. S5 ....6.80
Pittsburgh J5 .....6.55
Youngstown U5 .....6.55

BARS, C.F., Leaded Alloy
(Including leaded extra)
Ambridge,Pa. W18 ....9.925
BeaverFalls,Pa. M12 ..9.925
Camden,N.J. P13 .....10.10
Chicago W18 .....9.925
Cleveland C20 .....9.925*
Elyria,O. W8 .....9.925
LosAngeles P2, S30 ..11.40*
Monaca,Pa. S17 .....9.925
Newark,N.J. W18 .....10.10
SpringCity,Pa. K3 .....10.10
Warren,O. C17 .....9.925

*Grade A; add 0.50c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 .....7.30
BeaverFalls,Pa. M12,R2 .7.30
Birmingham C15 .....7.90
Buffalo B5 .....7.35
Camden,N.J. P13 .....7.75
Carnegie,Pa. C12 .....7.30
Chicago W18 .....7.30
Cleveland A7, C20 .....7.30
Detroit B5, P17 .....7.50
Detroit S41 .....7.30
Donora,Pa. A7 .....7.30
Elyria,O. W8 .....7.30
FranklinPark,Ill. N5 ....7.30
Gary,Ind. R2 .....7.30
GreenBay,Wis. F7 .....7.30
Hammond,Ind. J5, L2 ..7.30
Hartford,Conn. R2 .....7.80
Harvey,Ill. B5 .....7.30
LosAngeles(49) S30 ....8.75
LosAngeles P2, R2 .....8.75
Mansfield,Mass. B5 .....7.85
Massillon,O. R2, R8 ....7.30
Midland,Pa. C18 .....7.30
Monaca,Pa. S17 .....7.30
Newark,N.J. W18 .....7.75
NewCastle,Pa.(17) B4 ..7.30
Pittsburgh J5 .....7.30
Plymouth,Mich. P5 .....7.55
Putnam,Conn. W18 .....7.85
Readville,Mass. C14 .....7.85
S.Chicago,Ill. W14 .....7.30
SpringCity,Pa. K3 .....7.75
Struthers,O. Y1 .....7.30
Warren,O. C17 .....7.30
Willimantic,Conn. J5 ....7.80
Waukegan,Ill. A7 .....7.30
Youngstown F3, Y1 .....7.30

BARS, Cold-Finished Carbon
(Turned and Ground)
Cumberland,Md.(5) C19 6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....8.775
BeaverFalls,Pa. M12,R2 8.775
Bethlehem,Pa. B2 .....8.775
Bridgeport,Conn. C32 ...8.925
Buffalo B5 .....8.775
Camden,N.J. P13 .....8.95
Canton,O. T7 .....8.775
Carnegie,Pa. C12 .....8.775
Chicago W18 .....8.775
Cleveland A7, C20 .....8.775
Detroit B5, P17 .....8.975
Detroit S41 .....8.775
Donora,Pa. A7 .....8.775
Elyria,O. W8 .....8.775
FranklinPark,Ill. N5 ....8.775
Gary,Ind. R2 .....8.775
GreenBay, Wis. F7 .....8.775
Hammond,Ind. J5, L2 ..8.775
Hartford,Conn. R2 .....9.075
Harvey,Ill. B5 .....8.775
Lackawanna,N.Y. B2 ..8.775
LosAngeles P2, S30 ...10.75
Mansfield,Mass. B5 ....9.075
Massillon,O. R2, R8 ...8.775
Midland,Pa. C18 .....8.775
Monaca,Pa. S17 .....8.775
Newark,N.J. W18 .....8.95
Plymouth,Mich. P5 .....8.975
S.Chicago,Ill. W14 .....8.775
SpringCity,Pa. K3 .....8.95
Struthers,O. Y1 .....8.775
Warren,O. C17 .....8.775
Waukegan,Ill. A7 .....8.775
Willimantic,Conn. J5 ....9.075
Worcester,Mass. A7 ....9.075
Youngstown F3, Y1 ....8.775

BARS, Reinforcing (To Fabricators)

AlabamaCity,Ala. R2 ..5.425
Atlanta A11 .....5.425
Birmingham C15 .....5.425
Buffalo R2 .....5.425
Cleveland R2 .....5.425
Ecorse,Mich. G5 .....5.425
Emeryville,Calif. J7 ..6.175
Fairfield,Ala. T2 ....5.425
Fairless,Pa. U5 .....5.575
Fontana,Calif. K1 ....6.125
Ft.Worth,Tex.(4)(26)T45.875
Gary,Ind. U5 *.....5.425
Houston S5 .....5.675
Ind.Harbor,Ind. I-2, Y1 5.425
Johnstown,Pa. B2 .....5.425
Joliet, Ill. P22 .....5.425
KansasCity,Mo. S5 ....5.675
Kokomo,Ind. C16 ....5.525
Lackawanna,N.Y. B2..5.425
LosAngeles B3 .....6.125
Madison,Ill. L1 .....5.625
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ..5.875
Niles,Calif. P1 .....6.125
Pittsburg,Calif. C11 ...6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 ....6.175
SandSprings,Okla. S5..5.925
Seattle B3, N14 .....6.175
S.Chicago,Ill. R2 .....5.425
S.Duquesne,Pa. U5 ....5.425
S.SanFrancisco B3 ....6.175
SparrowsPoint,Md. B2..5.425
Sterling,Ill.(1) N15 ...5.425
Sterling,Ill. N15 .....5.525
Struthers,O. Y1 .....5.425
Tonawanda,N.Y. B12 ..6.00
Torrance,Calif. C11 ...6.125
Youngstown R2, U5..5.425

BARS, Reinforcing (Fabricated; to Consumers)

Boston B2, U8 .....7.65
Chicago U8 .....6.91
Cleveland U8 .....6.89
Houston S5 .....7.35
Johnstown,Pa. B2 ....7.08
KansasCity,Mo. S5 ....7.35
Lackawanna,N.Y. B2 ..6.85
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.55
Philadelphia U8 .....7.38
Pittsburgh J5, U8 .....7.10
SandSprings,Okla. S5 ...7.60
Seattle B3, N14 .....7.70
SparrowsPt.,Md. B2 ...7.08
St.Paul U8 .....7.92
Williamsport,Pa. S19 ..7.00

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy(Staybolt)B14 .18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2 5.325
ChicagoHts.(4)(44) I-2 5.425
ChicagoHts.(4) C2 ....5.425
Franklin,Pa.(3) F5 ...5.325
Franklin,Pa.(4) F5 ...5.425
JerseyShore,Pa.(3) J8 ..5.30
Marion,O.(3) P11 ....5.325
Tonawanda(3) B12 ..5.325
Tonawanda(4) B12 ...6.00
Williamsport,Pa.(3) S19 5.50

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..4.925
Allenport,Pa. P7 .....4.925
Ashland,Ky.(8) A10 ..4.925
Cleveland J5, R2 .....4.925
Conshohocken,Pa. A3 ..4.975
Detroit(8) M1 .....4.925
Ecorse,Mich. G5 .....4.925
Fairfield,Ala. T2 .....4.925
Fairless,Pa. U5 .....4.975
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....4.925
Geneva,Utah C11 .....5.025
GraniteCity,Ill.(8) G4 5.025
Ind.Harbor,Ind. I-2, Y1 4.925
Irvin,Pa. U5 .....4.925
Lackawanna,N.Y. B2 ..4.925
Mansfield,O. E6 .....4.925
Munhall,Pa. U5 .....4.925
Newport,Ky.(8) A2 ....4.925
Niles,O. M21, S3 ....4.925
Pittsburg,Calif. C11 ..5.625
Pittsburgh J5 .....4.925
Portsmouth,O. P12 ....4.925
Riverdale,Ill. A1 .....4.925
Sharon,Pa. S3 .....4.925
S.Chicago,Ill. W14 ....4.925
SparrowsPoint,Md. B2 4.925
Steubenville,O. W10 ...4.925
Warren,O. R2 .....4.925
Weirton,W.Va. W6 ....4.925
Youngstown U5, Y1 ...4.925

SHEETS, H.R. (19) Ga. & Lighter

Niles,O. M21 .....6.05

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.10
Ind.Harbor,Ind. Y1 ....8.10
Irvin,Pa. U5 .....8.10
Munhall,Pa. U5 .....8.10
Newport,Ky. A2 .....8.10
Youngstown U5, Y1 ....8.10

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Cleveland J5, R2 .....7.275
Conshohocken,Pa. A3 ..7.325
Ecorse,Mich. G5 .....7.275
Fairfield,Ala. T2 .....7.275
Fairless,Pa. U5 .....7.325
Farrell,Pa. S3 .....7.275
Fontana,Calif. K1 ....8.025
Gary,Ind. U5 .....7.275
Ind.Harbor,Ind. I-2, Y1 7.275
Irvin,Pa. U5 .....7.275
Lackawanna(35) B2 ..7.275
Munhall,Pa. U5 .....7.275
Pittsburgh J5 .....7.275
S.Chicago,Ill. U5, W14 7.275
Sharon,Pa. S3 .....7.275
SparrowsPoint(36) B2 7.275
Warren,O. R2 .....7.275
Weirton,W.Va. W6 ....7.275
Youngstown U5, Y1 ...7.275

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ..5.175
Cleveland R2 .....5.675
Warren,O. R2 .....5.675

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....6.80
Middletown,O. A10 ....6.55
Warren,O. R2 .....6.80

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.05
Allenport,Pa. P7 .....6.05
Cleveland J5, R2 .....6.05
Conshohocken,Pa. A3 ..6.10
Detroit M1 .....6.05
Ecorse,Mich. G5 .....6.05
Fairfield,Ala. T2 .....6.05
Fairless,Pa. U5 .....6.10
Follansbee,W.Va. F4 ...6.05
Fontana,Calif. K1 ....7.30
Gary,Ind. U5 .....6.05
GraniteCity,Ill. G4 ....6.15
Ind.Harbor,Ind. I-2, Y1 6.05
Irvin,Pa. U5 .....6.05
Lackawanna,N.Y. B2 ..6.05
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....6.05
Newport,Ky. A2 .....6.05
Pittsburg,Calif. C11 ...7.00
Pittsburgh J5 .....6.05
Portsmouth,O. P12 ....6.05
SparrowsPoint,Md. B2..6.05
Steubenville,O. W10 ...6.05
Warren,O. R2 .....6.05
Weirton,W.Va. W6 ....6.05
Yorkville,O. W10 .....6.05
Youngstown Y1 .....6.05

SHEETS, Cold-Rolled, High-Strength, Low Alloy

Cleveland J5, R2 ....8.975
Ecorse,Mich. G5 .....8.975
Fairless,Pa. U5 .....9.025
Fontana,Calif. K1 ...10.275
Gary,Ind. U5 .....8.975
IndianaHarbor,Ind. Y1 8.975
Irvin,Pa. U5 .....8.975
Lackawanna(37) B2 ..8.975
Pittsburgh J5 .....8.975
SparrowsPoint(38) B2..8.975
Warren,O. R2 .....8.975
Weirton,W.Va. W6 ....8.975
Youngstown Y1 .....8.975

SHEETS, Culvert	Cu Steel	Cu Fe
Ashland,Ky. A10	6.95	7.20
Canton,O. R2	6.95	7.45
Fairfield T2	6.95	7.20
Gary,Ind. U5	6.95	7.20
GraniteCity,Ill. G4	7.05	...
Ind.Harbor I-2	6.95	7.20
Irvin,Pa. U5	6.95	7.20
Kokomo,Ind. C16	7.05	...
MartinsFry. W10	6.95	7.20
Pitts.,Calif. C11	7.70	...
Pittsburgh J5	6.95	...
SparrowsPt. B2	6.95	...

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ....7.20

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2..6.60†
Ashland,Ky. A10 ....6.60†
Canton,O. R2 .....6.60†
Dover,O. E6 .....6.60†
Fairfield,Ala. T2 ....6.60†
Gary,Ind. U5 .....6.60†
GraniteCity,Ill. G4 ....6.70*
Ind.Harbor,Ind. I-2....6.60†
Irvin,Pa. U5 .....6.60†
Kokomo,Ind. C16 ....6.70†
MartinsFerry,O. W10 ..6.60*
Middletown,O. A10 ....6.60†
Pittsburg,Calif. C11 ...7.35*
Pittsburgh J5 .....6.60†
SparrowsPt.,Md. B2 ..6.60†
Warren,O. R2 .....6.60†
Weirton,W.Va. W6 ....6.60*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.175

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....9.725
SparrowsPt.(39) B2 ...9.725
Pittsburgh J5 .....9.725

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.00
Irvin,Pa. U5 .....7.00

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....6.85
Middletown,O. A10 ....6.85

SHEETS, Electrogalvanized

Cleveland(28) R2 ....7.425
Niles,O.(28) R2 .....7.425
Youngstown J5 .....7.275
Weirton,W.Va. W6 ....7.275

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.25
Butler,Pa. A10 (type 2) 9.35

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.625
Cleveland R2 .....6.625
Fairfield,Ala. T2 .....6.625
Gary,Ind. U5 .....6.625
GraniteCity,Ill. G4 ....6.725
Ind.Harbor,Ind. I-2, Y1 6.625
Irvin,Pa. U5 .....6.625
Middleotwn,O. A10 ....6.625
Niles,O. M21, S3 .....6.625
Youngstown Y1 .....6.625

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ..8.65
Ind.Harbor,Ind. I-2 ..8.475
Yorkville,O. W10 .....8.475

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va. W10 7.00
Gary,Ind. U5 .....7.00
Mansfield,O. E6 .....7.00
Middletown,O. A10 ....7.00
Niles,O. M21, S3 .....7.00
Warren,O. R2 .....7.00
Weirton,W.Va. W6 ....7.00

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.40

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D3 Dearborn Div., Sharon Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&FuelAssoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel& Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md.Fine&Special.Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W.Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S10 Seneca Steel Service
S41 Stainless Steel Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.
T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ..4.925
Allenport,Pa. P7 .....4.925
Alton, Ill. L1 .....5.125
Ashland,Ky.(8) A10 ...4.925
Atlanta A11 .....4.925
Bessemer,Ala. T2 .....4.925
Birmingham C15 .....4.925
Buffalo(27) R2 .....4.925
Conshohocken,Pa. A3 ..4.975
Detroit M1 .....5.025
Ecorse,Mich. G5 .....4.925
Fairfield,Ala. T2 .....4.925
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....4.925
Ind.Harbor,Ind. I-2, Y1.4.925
Johnstown,Pa.(25) B2..4.925
Lackaw'na,N.Y.(25) B2 4.925
LosAngeles(25) B3 ....5.675
Minnequa,Colo. C10 ...6.025
Riverdale,Ill. A1 .....4.925
SanFrancisco S7 .....6.35
Seattle(25) B3 .....5.925
Seattle N14 .....6.35
Sharon,Pa. S3 .....4.925
S.Chicago W14 .....4.925
S.SanFrancisco(25) B3 5.675
SparrowsPoint,Md. B2..4.925
Sterling,Ill.(1) N15 ...4.925
Sterling,Ill. N15 .....5.025
Torrance,Calif. C11 ...5.675
Warren,O. R2 .....4.925
Weirton,W.Va. W6 ....4.925
Youngstown U5 .....4.925

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18 .....8.10
Farrell,Pa. S3 .....8.10
Gary,Ind. U5 .....8.10
Houston S5 .....8.35
Ind.Harbor,Ind. Y1 ....8.10
KansasCity,Mo. S5 ....8.35
LosAngeles B3 .....9.30
Lowellville,O. S3 .....8.10
Newport,Ky. A2 .....8.10
Sharon,Pa. A2, S3 .....8.10
S.Chicago,Ill. W14 ....8.10
Youngstown U5, Y1 ....8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer,Ala. T2 .....7.325
Conshohocken,Pa. A3 ..7.325
Ecorse,Mich. G5 .....7.325
Fairfield,Ala. T2 .....7.325
Farrell,Pa. S3 .....7.325
Gary,Ind. U5 .....7.325
Ind.Harbor,Ind. I-2, Y1.7.325
Lackawanna,N.Y. B2 ..7.325
LosAngeles(25) B3 ....8.075
Seattle(25) B3 .....8.325
Sharon,Pa. S3 .....7.325
S.Chicago,Ill. W14 ....7.325
S.SanFrancisco(25) B3 .8.075
SparrowsPoint,Md. B2..7.325
Warren,O. R2 .....7.325
Weirton,W.Va. W6 ....7.325
Youngstown U5, Y1 ...7.325

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ...5.175
Warren,O. R2 .....5.675

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 .....7.15
Baltimore T6 .....7.15
Boston T6 .....7.70
Buffalo S40 .....7.15
Cleveland A7, J5 .....7.15
Dearborn,Mich. D3 ....7.15
Detroit D2, M1, P20....7.15
Dover,O. G6 .....7.15
Ecorse,Mich. G5 .....7.15
Evanston,Ill. M22 .....7.25
Follansbee,W.Va. F4 ...7.15
Fontana,Calif. K1 .....9.00
FranklinPark,Ill. T6 ....7.25
Ind.Harbor,Ind. Y1 ....7.15
Indianapolis J5 .....7.30
LosAngeles J5 .....9.05
LosAngeles C1 .....9.20
NewBedford,Mass. R10..7.60
NewBritain,Conn. S15 ..7.60
NewCastle,Pa. B4, E5 ..7.15
NewHaven,Conn. D2 ....7.60
NewKensington,Pa. A6 .7.15
Pawtucket,R.I. R3 .....7.80
Pawtucket,R.I. N8 .....7.70
Philadelphia P24 .....7.70
Pittsburgh J5 .....7.15
Riverdale,Ill. A1 .....7.25
Rome,N.Y.(32) R6 .....7.15
Sharon,Pa. S3 .....7.15
Trenton,N.J.(31) R5 ...8.60
Wallingford,Conn. W2 ..7.60
Warren,O. R2, T5 .....7.15
Weirton,W.Va. W6 .....7.15
Worcester,Mass. A7 ....7.70
Youngstown J5, Y1 ....7.15

STRIP, Cold-Rolled Alloy

Boston T6 .....15.40
Carnegie,Pa. S18 .....15.05
Cleveland A7 .....15.05
Dover,O. G6 .....15.05
Farrell,Pa. S3 .....15.05
FranklinPark,Ill. T6 ..15.05
Harrison,N.J. C18 .....15.05
Indianapolis J5 .....15.20
Lowellville,O. S3 .....15.05
Pawtucket,R.I. N8 .....15.40
Riverdale,Ill. A1 .....15.05
Sharon,Pa. S3 .....15.05
Worcester,Mass. A7 ...15.35
Youngstown J5 .....15.05

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7 .....10.45
Dearborn,Mich. D3 ....10.60
Dover,O. G6 .....10.45
Ecorse,Mich. G5 .....10.50
Farrell,Pa. S3 .....10.50
Ind.Harbor,Ind. Y1 ....10.65
Sharon,Pa. S3 .....10.50
Warren,O. R2 .....10.45

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	....	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	....	....	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
NewYork W3	....	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	....	10.70	12.90	16.10	19.30
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	....	....
Fostoria,O. S1	18.30	22.15	....
FranklinPark,Ill. T6	18.45	22.30	26.65
Harrison,N.J. C18	18.10	21.95	26.30
NewYork W3	18.10	21.95	26.30
Palmer,Mass. W12	18.10	....	....
Trenton,N.J. R5	18.10	21.95	26.30
Worcester,Mass. A7, T6	18.10	21.95	26.30
Youngstown J5	18.45	22.30	26.65

SILICON STEEL

H.R. SHEETS(22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	....	11.80	12.90	13.95
Mansfield,O. E6	9.625	11.10	11.80	12.90	13.95
Newport,Ky. A2	9.625	11.10	11.80	12.90	13.95
Niles,O. M21, S3	9.625	11.10	11.80	12.90	....
Vandergrift,Pa. U5	....	11.10	11.80	12.90	13.95
Warren,O. R2	9.625	11.10	11.80	12.90	....
Zanesville,O. A10	....	11.10	11.80	12.90	13.95

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.35	12.05	13.15	14.20
Brackenridge,Pa. A4	....	....	12.05	13.15	14.20
GraniteCity,Ill. G4	9.725*	10.95*	11.65*	12.75*	....
IndianaHarbor,Ind. I-2	9.625*	10.85*	11.55*	12.65*	....
Mansfield,O. E6	9.625*	11.35	12.05	13.15	14.20
Vandergrift,Pa. U5	9.625*	11.35	12.05	13.15	14.20
Warren,O. R2	9.625*	11.35	12.05	13.15	14.20
Zanesville,O. A10	....	11.35†	12.05	13.15	14.20
					Stator
Vandergrift,Pa. U5	....	....	....	....	7.85

H.R. SHEETS (22 Ga., cut lengths)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.00	15.55	16.05	17.10
Vandergrift,Pa. U5	15.00	15.50	16.05	17.10
Zanesville,O. A10	15.00	15.55	16.05	17.10

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	17.60	19.20	19.70	20.20	15.25††
Butler,Pa. A10	....	....	....	19.20	19.70	20.20
Vandergrift,Pa. U5	16.60	17.60	19.20	19.70	20.20	15.25**
Warren,O. R2	....	....	....	....	....	15.25‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. **Cut lengths, ¾-cent lower. ††Coils only.

Weirton,W.Va. W6 ....10.50
Youngstown Y1 .....10.65

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....7.90

STRIP, C.R. Electrogalvanized

Cleveland A7 .....7.15*
Dover,O. G6 .....7.15*
Evanston,Ill. M22 .....7.25*
Riverdale,Ill. A1 .....7.25*
Warren,O. B9, T5 ....7.15*
Worcester,Mass. A7 ...7.70*
Youngstown J5 .....7.15*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon,Pa. S3 .....7.275

TIGHT COOPERAGE HOOP

Atlanta A11 .....5.65
Riverdale,Ill. A1 .....5.50
Sharon,Pa. S3 .....5.35
Youngstown U5 .....5.35

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$8.75	$9.00	$9.40
Fairfield,Ala. T2	8.85	9.10	9.50
Fairless,Pa. U5	8.85	9.10	9.50
Fontana,Calif. K1	9.50	9.75	10.15
Gary,Ind. U5	8.75	9.00	9.40
GraniteCity,Ill. G4	8.85	9.10	9.50
IndianaHarbor,Ind. I-2, Y1	8.75	9.00	9.40
Irvin,Pa. U5	8.75	9.00	9.40
Niles,O. R2	8.75	9.00	9.40
Pittsburg,Calif. C11	9.50	9.75	10.15
SparrowsPoint,Md. B2	8.85	9.10	9.50
Weirton,W.Va. W6	8.75	9.00	9.40
Yorkville,O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	7.725	7.925	....
Niles,O. R2	7.725	7.925	8.125

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$10.05	$10.30
Fairfield,Ala. T2	10.15	10.40
Fairless,Pa. U5	10.15	10.40
Fontana,Calif. K1	10.80	11.05
Gary,Ind. U5	10.05	10.30
Ind.Harb. Y1	10.05	10.30
Pitts.,Calif. C11	10.80	11.05
Sp.Pt.,Md. B2	10.15	10.40
Weirton,W.Va. W6	10.05	10.30
Yorkville,O. W10	10.05	10.30

BLACK PLATE (Base Box)

Aliquippa,Pa. J5 .....$7.85
Fairfield,Ala. T2 .....7.95
Fairless,Pa. U5 .....7.95
Fontana,Calif. K1 .....8.60
Gary,Ind. U5 .....7.85
GraniteCity,Ill. G4 .....7.95
Ind.Harbor,Ind. I-2, Y1..7.85
Irvin,Pa. U5 .....7.85

Niles,O. R2	7.85
Pittsburg,Calif. C11	8.60
SparrowsPoint,Md. B2	7.95
Weirton,W.Va. W6	7.85
Yorkville,O. W10	7.85

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5 .....$7.50
Gary,Ind. U5 .....7.50
GraniteCity,Ill. G4 .....7.60
Ind.Harbor,Ind. Y1 .....7.50
Irvin,Pa. U5 .....7.50
Yorkville,O. W10 .....7.50

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5 .....$9.70
Irvin,Pa. U5 .....9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)

Gary,Ind. U5 .....$11.25

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ..7.65
Aliquippa,Pa. J5 .....7.65
Alton,Ill. L1 .....7.85
Atlanta A11 .....7.65
Bartonville,Ill. K4 .....7.75
Buffalo W12 .....7.65
Chicago W13 .....7.65
Cleveland A7, C20 .....7.65
Crawfordsville,Ind. MS..7.75
Donora,Pa. A7 .....7.65
Duluth A7 .....7.65
Fairfield,Ala. T2 .....7.65
Fostoria,O.(24) S1 .....7.75
Houston S5 .....7.90
Jacksonville,Fla. M8 ....8.00
Johnstown,Pa. B2 .....7.65
Joliet,Ill. A7 .....7.65
KansasCity,Mo. S5 .....7.90
Kokomo,Ind. C16 .....7.75
LosAngeles B3 .....8.60
Minnequa,Colo. C10 ....7.90
Monessen,Pa. P7, P16 ..7.65
N.Tonawanda,N.Y. B11 .7.65
Palmer,Mass. W12 .....7.95
Pittsburg,Calif. C11 ....8.60
Portsmouth,O. P12 .....7.65
Rankin,Pa. A7 .....7.65
S.Chicago,Ill. R2 .....7.65
S.SanFrancisco C10 ....8.60
SparrowsPoint,Md. B2 ..7.75
Sterling,Ill.(1) N15 ....7.65
Sterling,Ill. N15 .....7.75
Struthers,O. Y1 .....7.65
Waukegan,Ill. A7 .....7.65
Worcester,Mass. A7 ....7.95

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4 ....12.65
Buffalo W12 .....12.65
Cleveland A7 .....12.65
Donora,Pa. A7 .....12.65
Duluth A7 .....12.65
Johnstown,Pa. B2 .....12.65
Minnequa,Colo. C10 ...12.775
Monessen,Pa. P7, P16..12.65
Muncie,Ind. I-7 .....12.85
NewHaven,Conn. A7 ...12.95
Palmer,Mass. W12 .....12.95
Pittsburg,Calif. C11 ....13.45
Portsmouth,O. P12 .....12.65
Roebling,N.J. R5 .....12.95
SparrowsPt.,Md. B2 ...12.75
Struthers,O. Y1 .....12.65
Trenton,N.J. A7 .....12.95
Waukegan,Ill. A7 .....12.65
Worcester,Mass. A7 ...12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....9.30
Alton,Ill. L1 .....9.50
Buffalo W12 .....9.30
Cleveland A7 .....9.30
Donora,Pa. A7 .....9.30
Duluth A7 .....9.30
Johnstown,Pa. B2 .....9.30
KansasCity,Mo. S5 .....9.55
LosAngeles B3 .....10.25
Minnequa,Colo. C10 ....9.50
Monessen,Pa. P7, P16 ..9.30
NewHaven,Conn. A7 ...9.60
Palmer,Mass. W12 .....9.60
Pittsburg,Calif. C11 ...10.25
Portsmouth,O. P12 .....9.30
Roebling,N.J. R5 .....9.60
S.Chicago,Ill. R2 .....9.30
S.SanFrancisco C10 ...10.25
SparrowsPt.,Md. B2 ....9.40
Struthers,O. Y1 .....9.30
Trenton,N.J. A7 .....9.60
Waukegan,Ill. A7 .....9.30
Worcester,Mass. A7 ....9.60

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5 .....9.30
Alton,Ill. L1 .....9.50
Bartonville,Ill. K4 .....9.40
Buffalo W12 .....9.30
Cleveland A7 .....9.30
Donora,Pa. A7 .....9.30
Duluth A7 .....9.30
Fostoria,O. S1 .....9.35
Johnstown,Pa. B2 .....9.30
KansasCity,Mo. S5 .....9.55
LosAngeles B3 .....10.25
Milbury,Mass.(12) N6 ..9.60
Minnequa,Colo. C10 ....9.50
Monessen,Pa. P7, P16 ..9.30
Muncie,Ind. I-7 .....9.50
Palmer,Mass.(12) W12..9.60
Pittsburg,Calif. C11 ...10.25
Portsmouth,O. P12 .....9.30
Roebling,N.J. R5 .....9.60
S.Chicago,Ill. R2 .....9.30
S.SanFrancisco C10 ...10.25
SparrowsPt.,Md. B2 ....9.40
Struthers,O. Y1 .....9.30
Trenton,N.J. A7 .....9.60
Waukegan,Ill. A7 .....9.30
Worcester A7, J4, T6..9.60

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1 .....15.80
Bartonville,Ill. K4 ....15.70
Buffalo W12 .....15.60
Chicago W13 .....15.60
Cleveland A7 .....15.60
Crawfordsville,Ind. MS.15.70
Fostoria,O. S1 .....15.60
Houston S5 .....15.85
Jacksonville,Fla. M8 ...15.95
Johnstown,Pa. B2 .....15.60
KansasCity,Mo. S5 .....15.85
Kokomo,Ind. C16 .....15.60
Minnequa,Colo. C10 ....15.85
Monessen,Pa. P16 .....15.60
Muncie,Ind. I-7 .....15.80
Palmer,Mass. W12 .....15.90
S.SanFrancisco C10 ...16.45
Waukegan,Ill. A7 .....15.60
Worcester,Mass. A7, T6 15.90

ROPE WIRE	(A)
Bartonville,Ill. K4	12.75
Buffalo W12	12.75
Fostoria,O. S1	12.75
Johnstown,Pa. B2	12.75
Monessen,Pa. P7	12.75
Muncie,Ind. I-7	12.95
Palmer,Mass. W12	13.05
Portsmouth,O. P12	12.75
Roebling,N.J. R5	13.05
St. Louis L8	12.75
SparrowsPt.,Md. B2	12.85
Struthers,O. Y1	12.75
Worcester,Mass. J4	13.05

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Tire Bead

Bartonville,Ill. K4	16.55
Monessen,Pa. P16	16.55
Roebling,N.J. R5	17.05

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	11.65
Baltimore T6	11.95
Boston T6	11.95
Buffalo W12	11.65
Chicago W13	11.75
Cleveland A7	11.65
Crawfordsville,Ind. MS	11.65
Dover,O. G6	11.65
Fostoria,O. S1	11.65
FranklinPark,Ill. T6	11.75
Kokomo,Ind. C16	11.65
Massillon,O. R8	11.65
Milwaukee C23	11.85
Monessen,Pa. P7, P16	11.65
Palmer,Mass. W12	11.95
Pawtucket,R.I. N8	11.95
Philadelphia,Pa. P24	11.95
Riverdale,Ill. A1	11.75
Rome,N.Y. R6	11.65
Sharon,Pa. S3	11.65
Trenton,N.J. R5	11.95
Warren,O. B9	11.65
Worcester,Mass. A7, T6	11.95

NAILS, Stock

	Colo.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. MS	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. MS	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7	$9.10

NAILS, Cut (100 lb keg)
To Dealers (33)

Conshohocken,Pa. A3	$9.80
Wheeling,W.Va. W10	9.80

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. MS	177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Houston S5	180
Jacksonville,Fla. MS	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	175
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.) (per 97 lb Net Box)
Coil No. 3150

AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. MS	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. MS	10.36
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill.(37) N15	10.36

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. MS	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville,Fla. MS	10.70
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S.Chicago,Ill. R2	10.60
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(37) N15	10.70

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. MS	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. MS	10.75
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill.(37) N15	10.75

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. MS	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. MS	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

Birmingham C15	172
ChicagoHts.,Ill. C2, I-2	172
Duluth A7	172
Franklin,Pa. F5	172
Huntington,W.Va. C15	172
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	177
Sterling,Ill.(1) N15	172
Tonawanda,N.Y. B12	174

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198*
Bartonville,Ill. K4	198
Crawfordsville,Ind. MS	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. MS	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198††

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-14½ga.J5	190§
Atlanta A11	192*
Bartonville,Ill. K4	192
Crawfordsville,Ind. MS	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. MS	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

WIRE (16 gage)	An'ld Stone	Galv. Stone
Ala.City,Ala.R2	17.15 18.70**	
Aliq'ppa,Pa. J5	17.15	18.95
Bartonville K4	17.25	19.05
Cleveland A7	17.15	
Craw'dsville M8	17.25	19.05
Fostoria,O. S1	17.65	19.20†
Houston S5	17.40	18.95**
Jacksonville M8	17.25	19.05
Johnstown B2	17.15	18.95§
Kan.City,Mo. S5	17.40	
Kokomo C16	17.25	18.80†
Minnequa C10	17.40	18.95**
P'lm'r,Mass.W12	17.45	19.00†
Pitts.,Calif. C11	17.50	19.05†
SparrowsPt. B2	17.25	19.05§
Sterling(37)N15	17.25	19.05††
Waukegan A7	17.15	18.70†
Worcester A7	17.45	

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
Ala.City,Ala. R2	8.65	9.20**
Aliquippa J5	8.65	9.325§
Atlanta(48) A11	8.75	9.425*
Bartonville(48) K4	8.75	9.425
Buffalo W12	8.65	9.20†
Cleveland A7	8.65	
Crawfordsville M8	8.75	9.425
Donora,Pa. A7	8.65	9.20†
Duluth A7	8.65	9.20†
Fairfield T2	8.65	9.20†
Houston(48) S5	8.90	9.45**
Jacks'ville,Fla. M8	8.75	9.425
Johnstown B2(48)	8.65	9.325§
Joliet,Ill. A7	8.65	9.20†
Kans.City(48) S5	8.90	9.45**
Kokomo C16	8.75	9.30†
LosAngeles B3	9.60	10.275§
Minnequa C10	8.90	9.45**
Monessen P7(48)	8.65	9.325§
Palmer,Mass. W12	8.95	9.50†
Pitts.Calif. C11	9.60	10.15†
Rankin,Pa. A7	8.65	9.20†
S.Chicago R2	8.65	9.20**
S.SanFran. C10	9.60	10.15**
Spar'wsPt.B2(48)	8.75	9.425§
Sterling(48) N15	8.90	9.575††
Sterling(1) (48)	8.80	9.475††
Struthers,O. Y1	8.65	9.30†
Worcester,Mass.A7	8.95	9.50†

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

BOLTS

Carriage, Machine Bolts
Full Size Body (cut thread)
½ in. and smaller:

6 in. and shorter	49.0
Longer than 6 in.	39.0
⅝ in. thru 1 in.:	
6 in. and shorter	39.0
Longer than 6 in.	35.0
1⅛ in. and larger:	
All lengths	35.0

Undersized Body (rolled thread)
½ in. and smaller:

6 in. and shorter	49.0

Carriage, Machine, Lag Bolts
Hot Galvanized:
½ in. and smaller:

6 in. and shorter	29.0
Longer than 6 in.	15.0
⅝ in. and larger:	
All lengths	12.0

Lag Bolts (all diam.)

6 in. and shorter	49.0
Longer than 6 in.	39.0

Plow and Tap Bolts

½ in. and smaller by 6 in. and shorter	49.0
Larger than ½ in. or longer than 6 in.	39.0

Blank Bolts 39.0
Step, Elevator, Tire Bolts 49.0
Stove Bolts, Slotted:

⅛ to ¼ in. incl., 3 in. and shorter	55.0
⅝ to ½ in., inclusive	55.0

NUTS

Reg. & Heavy Square Nuts:
All sizes 55.5
Square Nuts, Reg. & Heavy, Hot Galvanized:
All sizes 41.0
Hex Nuts, Reg. & Heavy, Hot Pressed:

¾ in. and smaller	60.5
⅞ in. to 1 in., incl.	55.5
1⅛ in. to 1½ in., incl.	58.5
1⅝ in. and larger	53.5

Hex Nuts, Reg. & Heavy, Cold Punched:

¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, All Types, Hot Galvanized:

¾ in. and smaller	46.5
⅞ in. to 1 in., incl.	41.5
1⅛ in. to 1½ in., incl.	46.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, Finished (Incl. Slotted and Castellated):

1 in. and smaller	63.0
1¼ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅝ in. and smaller	60.5
¾ in. to 1 in., incl.	63.0
1⅛ to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Capscrews, Coarse or Fine Thread, Bright:

6 in. and shorter:	
⅝ in. and smaller	40.0
¾ in. and 1 in. diam.	22.0
Longer than 6 in.:	
⅝ in. and smaller	8.0
¾, ⅞, and 1 in. diam.	+ 6.0

High Carbon, Heat Treated:
6 in. and shorter:

⅝ in. and smaller	26.0
¾, ⅞, and 1 in. diam.	3.0

Longer than 6 in.:

⅝ in. and smaller	+ 13.0
¾, ⅞, and 1 in. diam.	+ 32.0

Flat Head Capscrews:

¾ in. and smaller	+ 76.0

Setscrews, Square Head, Cup Point, Coarse Thread:
Through 1 in. diam.:

6 in. and shorter	Net
Longer than 6 in.	+ 23

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.
Structural ½ in., larger 12.25
7/8 in. under: List less 19%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	25.98	23.54
1¼	13	....	30.78	23.36
1½	13	29.03	34.01	25.83
1¾	13	34.29	40.18	30.51
2	13	38.44	45.05	34.20
2¼	13	43.29	50.75	38.52
2¼	12	46.99	55.06	41.81
2½	12	51.76	60.65	46.05
2¾	12	56.04	65.67	49.88
3	12	59.76	70.03	53.19

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60-lb Under
Bessemer,Pa. U5	5.525	5.425	....	6.50
Ensley,Ala. T2	5.525	5.425	....	6.50
Fairfield,Ala. T2	....	....	....	6.50
Gary,Ind. U5	5.525	5.425	....	....
Huntington,W.Va. C15	....	....	....	6.50
IndianaHarbor,Ind. I-2	5.525	5.425	5.475	....
Johnstown,Pa. B2	....	....	....	(16)6.50
Lackawanna,N.Y. B2	5.525	5.425	....	6.50
Minnequa,Colo. C10	5.525	5.425	....	7.00
Steelton,Pa. B2	5.525	5.425	....	....
Williamsport,Pa. S19	....	....	....	6.50

TIE PLATES

Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.60
Ind.Harbor,Ind. I-2	6.60
Lackawanna,N.Y. B2	6.60
Minnequa,Colo. C10	6.60
Seattle B3	6.75
Steelton,Pa. B2	6.60
Torrance,Calif. C11	6.75

JOINT BARS

Bessemer,Pa. U5	6.975
Fairfield,Ala. T2	6.975
Ind.Harbor,Ind. I-2	6.975
Joliet,Ill. U5	6.975
Lackawanna,N.Y. B2	6.975
Minnequa,Colo. C10	6.975
Steelton,Pa. B2	6.975

AXLES

Ind.Harbor,Ind. S13	8.775
Johnstown,Pa. B2	8.775

TRACK BOLTS, Untreated

Cleveland R2	14.75
KansasCity,Mo. S5	14.75
Lebanon,Pa. B2	14.75
Minnequa,Colo. C10	14.75
Pittsburgh P14	14.75
Seattle B3	15.25

SCREW SPIKES

Lebanon,Pa. B2	14.50

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. I-2, Y1	9.75
KansasCity,Mo. S5	9.75
Lebanon,Pa. B2	9.75
Minnequa,Colo. C10	9.75
Pittsburgh J5	9.75
Seattle B3	10.25
S.Chicago,Ill. R2	9.75
Struthers,O. Y1	9.75
Youngstown R2	9.75

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. Base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.15c, finer than 15 Ga.
(25) Bar mill bands.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.80c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.025" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.50c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Ambridge, Pa. N2	+9.25	....	+2.75	....	+0.25	....	1.25	....	1.25	....	1	....	3.5	..
Lorain, O. N3	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Youngstown Y1	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

ELECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅜		¼		⅝		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Alton, Ill. L1	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Benwood, W. Va. W10	4.5	+22	+7.5	+31	+18	+39.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Butler, Pa. F6	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Fairless, Pa. N3	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Fontana, Calif. K1	....	....	....	....	....	....	+8.25	+23.5	+5.25	+19.5	+1.75	+15	0.75	+14.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	4.25	+11	7.25	+7	10.75	+2.5	13.25	+3.25
Lorain, O. N3	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sharon, Pa. S4	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sparrows Pt., Md. B2	3.5	+23	+8.5	+32	+19	+40.5	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Wheatland, Pa. W9	5.5	+21	+6	+30	+17	+38.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Youngstown R2, Y1	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Alton, Ill. L1	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	....	....	....	....
Benwood, W. Va. W10	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Etna, Pa. N2	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Fairless, Pa. N3	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Fontana, Calif. K1	1.25	+13.25	1.75	+12.75	3.25	+13	3.25	+13	+7.25	+24	+7.25	+24
Indiana Harbor, Ind. Y1	13.75	+0.75	14.25	+0.25	15.75	+0.5	15.25	+0.5	5.25	+11.5	5.25	+11.5
Lorain, O. N3	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sharon, Pa. M6	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sparrows Pt., Md. B2	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Wheatland, Pa. W9	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Youngstown R2, Y1	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	40.00	42.00	44.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	45.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	46.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	47.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	49.50	57.00	57.00
303	....	32.00	41.00	46.00	45.50	48.00	50.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	50.75	55.00	55.00
304L	....	....	48.25	51.50	53.00	55.50	58.50	63.25	62.75
305	28.50	36.75	42.50	47.50	45.25	47.75	51.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	60.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	71.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	92.75	96.75	96.75
314	....	....	77.50	....	86.50	91.00	92.75	99.00	104.25
316	39.75	49.50	62.25	69.25	69.25	73.00	76.75	80.75	80.75
316L	....	55.50	70.00	76.50	77.00	80.75	84.50	89.25	88.50
317	48.00	60.00	76.75	88.25	86.25	90.75	93.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	59.75	65.50	65.50
330	....	....	106.75	....	95.25	106.75	105.50	108.00	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25	79.25
403	....	....	28.25	....	32.00	33.75	35.00	40.25	40.25
405	19.50	25.50	29.75	36.00	33.50	35.25	37.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	36.00	48.25	48.25
420	26.00	33.50	34.25	41.75	39.25	41.25	45.25	52.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	36.75	51.75	42.00
431	....	28.75	37.75	....	42.00	44.25	46.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	47.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless Steel Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steels Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates—Carbon Base 5%	10%	15%	20%	Sheets—Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	34.70	37.95	42.25	46.70	39.75
304L	36.90	40.55	45.10	49.85	....
316	40.35	44.50	49.50	54.50	58.25
316L	45.05	49.35	54.70	60.10	....
316 Cb	47.30	53.80	61.45	69.10	....
321	36.60	40.05	44.60	49.30	47.25
347	38.25	42.40	47.55	52.80	57.00
405	28.60	29.85	33.35	36.85	....
410	28.15	29.55	33.10	36.70	....
430	28.30	29.80	33.55	37.25	....
Inconel	48.00	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....
Copper*	....	....	....	....	46.00

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	33.10	38.75

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.305	Cr-Hot Work	0.475
Extra Carbon	0.360	W-Cr Hot Work	0.500
Special Carbon	0.475	V-Cr Hot Work	0.520
Oil Hardening	0.475	HI-Carbon-Cr	0.925

Grade by Analysis (%) W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	....	4.285
18.25	4.25	1	4.75	....	2.500
18	4	2	9	....	2.870
18	4	2	....	....	1.960
18	4	1	....	....	1.795
9	3.5	..	....	....	1.395
13.5	4	3	....	....	2.060
13.75	3.75	2	5	....	2.440
6.4	4.5	1.9	....	5	1.300
6	4	3	....	6	1.545
1.5	4	1	....	8.5	1.155

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
Birmingham R2	62.00	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala. W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	66.50	66.50	67.00
S.Chicago,Ill W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
New York, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
Neville Island,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si of percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% and $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls, N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Rockwood,Tenn. T3 (Phos. 0.035% max)	78.50
Troy,N.Y. R2 (Phos. 0.035% max)	74.00
Philadelphia, deld.	82.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.50§	9.86§	....	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.00	8.90	9.68	....	8.70	8.65	12.33#	15.18	8.50	8.65	9.75
Birmingham	8.18	9.45	10.46	....	8.23	8.60	10.57	....	8.64	8.56	10.70
Boston	9.38	10.44	11.45	53.50	9.42	9.73	12.90#	15.28	9.63	9.72	11.20
Buffalo	8.25	9.00	11.07	55.98	8.50	8.80	11.00#	15.00	8.90	8.90	10.45
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.20	9.45	10.10	53.00	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati	8.34	9.48	10.10	52.43	8.54	8.92	11.06	14.86	9.18	8.93	10.21
Cleveland	8.18	9.45	10.20	52.33	8.33	8.69	10.80#	14.74	9.01	8.79	10.11
Dallas	7.50	8.80	....	....	7.65	7.60	11.01	....	7.65	8.10	9.35
Denver	9.10	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.43	9.70	10.45	56.50	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa.	8.20	9.45	9.95[10]	....	8.50	8.75	9.05[10]	....	9.00	8.85	10.10
Houston	7.10	8.40	8.45	54.32	7.25	7.20	11.10	13.50	7.25	7.70	8.95
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	8.25[2]	10.30[2]	11.90[2]	57.60	8.90	8.70[2]	12.10[2]	16.10	8.50[2]	8.65[2]	10.80[2]
Memphis, Tenn.	8.55	9.80	....	....	8.60	8.97	11.96#	....	9.01	8.93	10.56
Milwaukee	8.33	9.58	10.23	....	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill.	8.55	9.80	10.45	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.31	9.57	12.76#	15.09	9.35	9.43	10.66
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.00	8.90	9.92	52.69	8.70	8.65	11.51#	15.01	8.50	8.75	9.75**
Pittsburgh	8.18	9.45	10.45	52.00	8.33	8.60	10.80#	14.65	8.64	8.56	9.88
Portland, Oreg.	8.50	11.20	11.55	57.38	9.55	8.65	14.50	15.95	8.65	8.30	11.50
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.36	....	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul	8.79	10.04	10.71	....	8.84	9.21	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	55.10	9.45‡[2]	9.70	13.00	16.00	9.50	9.60	12.00
Seattle	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
Washington	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **¼ in. and heavier; ††as annealed; 2-3½ in. to 4 in. wide, inclusive; #1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; [2]—30,000 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $135; Salina, Pa., $140; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $175; Stevens Pottery, Ga., $185; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $150; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $155; E. Chicago, Ind., Joliet, Rockdale, Ill., $160; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $160; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 Per Cent: St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $238; Philadelphia, Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $245.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $298; Clearfield, Orviston, Snow Shoe, Pa., $305; Philadelphia, $310.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $338; Clearfield, Orviston, Snow Shoe, Pa., $345; Philadelphia, $350.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Whewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50; Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $29-$31, contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $26.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: deld. east of Mississippi River, ocean bags 23,000 lb and over; f.o.b. Riverton or Camden, N. J., west of Mississippi River	9.50
Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23,000 lb and over	10.50
Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.00
Annealed, 99.5% Fe	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	

	Dollars
Aluminum: Atomized, 500-lb drum, freight allowed Carlots	39.50
Ton lots	41.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	31.00-46.70†
Bronze, 5000-lb lots	47.20-51.50†
Copper: Electrolytic	14.75*
Reduced	14.75*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	74.00
Nickel-Silver, 5000-lb lots	48.80-53.50†
Phosphor-Copper, 5000-lb lots	59.30
Copper (atomized) 5000-lb lots	39.80-48.30†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	1.07
Stainless Steel, 316	1.26
Tin	14.50*
Zinc, 5000-lb lots	17.50-30.70†
Tungsten: Melting grade, 99% 60 to 200 mesh, nominal; 1000 lb and over	3.15
Less than 1000 lb	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5⅛	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.30	$5.30	$5.30	$5.50
Bar Size Angles	5.05	5.05	5.05	5.42
Structural Angles	5.05	5.05	5.05	5.42
I-Beams	5.11	5.11	5.11	5.45
Channels	5.11	5.11	5.11	5.45
Plates (basic bessemer)	6.62	6.62	6.62	6.94
Sheets, H.R.	8.20	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	25.71	25.59	25.59	26.46
Barbed Wire (†)	6.65	6.65	6.65	7.00
Merchant Bars	6.07	6.07	6.07	6.43
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.50	6.50	6.50	6.90
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails (§)	8.02	8.02	7.92	8.20

†Per 82 lb net reel. §Per 100-lb kegs, 20d nails and heavier.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	18.00-19.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	25.00
N. African hematite (spot)	nom.
Brazilian iron ore, 68.5%	14.60

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$9.50-10.00
Domestic, concentrates f.o.b. milling points	17.00-22.00

*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included), $1.15 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian	
48% 3:1	$46.00-48.00
48% 2.8:1	42.00-44.00
48% no ratio	32.00-34.00
South African Transvaal	
48% no ratio	$32.00-34.00
44% no ratio	24.00-25.00
Turkish	
48% 3:1	$51.00-55.00
Domestic Rail nearest seller	
18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.45
Saginaw, Mich., deld.	34.03
Erie, Pa., ovens	30.50
Everett, Mass., ovens: New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens	29.25
Painesville, Ohio, ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.29
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $4.85 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg	29.50
Industrial xylene	32.00-34.00
Per ton, bulk, ovens	
Ammonium sulfate	$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa., 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245. Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 23.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract c.l. $240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract c.l. $290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload packed, SM x D, 21.25c per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ¼" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c, less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.00c per lb of Si. Packed, c.l. 22.65c, ton lot 23.95c, less ton 24.95c. Add 0.5c for 0.50% Fe grade analyzing min 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.60c per lb of alloy; ton lot, packed, 10.95c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Contract, lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3⅜ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 2 lb and containing 2 lb of Si). Contract, carload bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l., bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l., pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of contained Cb; less ton lots, $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lot $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c; less than 2000 lb 21c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base); carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

(Continued from Page 128)

cent below the total in the same month last year. The total for the first six months this year was 1,916,910 tons, down noticeably from the 2,075,718 tons in 1957.

Order backlogs as of June 30 were 2,190,943 tons. More than half this total, or 1,266,743 tons, were scheduled for fabrication during the four months ending Oct. 31.

While industrial construction continues light, public work is active, and a fair amount of commercial inquiry is before fabricators.

Small and medium sized fabricating shops report their backlogs are being supported by such public work as schools and a fair run of commercial building demand.

In New England, though, increased activity is largely due to bridge inquiry, and most area fabricators are estimating bridge jobs, including some shops that usually show little interest in such work.

Practically all shops hold fair order backlogs. While they are far short of last summer's tonnage, they are heavy enough to assure rea-

(Please turn to Page 148)

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

23,000 tons, House of Representatives Office Building, Washington, D. C., to Bethlehem Steel Co., Bethlehem, Pa. (noted in previous issue as low bidder).

4000 tons, Woodrow Wilson Memorial Bridge, Washington, D. C., to Phoenix Bridge Co., Phoenixville, Pa.

1370 tons, state bridge over the Pocomake River, Sommerset County, Maryland, to Bethlehem Steel Co., Bethlehem, Pa.

300 tons, Idaho highway bridge, Cassia and Minidoka counties, to unstated fabricator; general contract to W. R. Cahoon Construction Co., Pocatello, Idaho, low at $436,811.

STRUCTURAL STEEL PENDING

1400 tons, State Employment Security Building, Baltimore, Blake Construction Co., Washington, general contractor.

600 tons, powerhouse extension and switchyard, Ft. Peck project, Montana; bids to U. S. Engineer, Garrison District, Riverdale, North Dakota, Oct. 14.

292 tons, state bridgework, Delaware County, Pennsylvania; bids Aug. 15; 143 tons of reinforcing bars also required.

95 tons, also 85 tons of used steel, government furnished; six Alaska Copper River highway spans; bids to the Bureau of Public Roads, Juneau, Alaska, Aug. 12.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1000 tons, Mercer generating plant, Hamilton Township, New Jersey, for the Public Service Co. of New Jersey, Newark, N. J., to the U. S. Steel Products Co., Trenton, N. J.

200 tons, dormitory, Swarthmore College, Swarthmore, Pa., through Turner Construction Co., New York, to Bethlehem Steel Co., Bethlehem, Pa.

120 tons, seafood distribution center, Philadelphia, through the M. & L. Construction Co., general contractor, to American Steel Engineering Co., Philadelphia.

REINFORCING BARS PENDING

750 tons, powerhouse extension, Ft. Peck, Montana; bids to the U. S. Engineer, Riverdale, North Dakota, Oct. 16.

600 tons, North High School, Seattle; bids in.

525 tons, penstocks, tunnel, tanks, etc., Ft. Peck, Mont.; bids to the U. S. Engineer, Riverdale, North Dakota, Aug. 28.

225 tons, Washington State undercrossing, Pierce County; general contract to Ostruske-Murphy Inc., Tacoma, Wash., at $162,000.

175 tons, Washington State, three concrete bridges, Pierce County; general contract to Ponders, Woodworth & Co. Inc., Tacoma, Wash., at $1,459,644.

150 tons, two Montana highway spans, Granite and Powell counties, general contract to Johnson & Pederson, Minneapolis, Minn., low at $281,727.

143 tons, state bridgework, Delaware County, Pennsylvania, bids Aug. 15; also 292 tons of structural steel.

127 tons, state bridgework, Bucks County, Pennsylvania; bids Aug. 15.

100 tons, Montana, two highway spans, Mineral County; general contract to Pew Construction Co., Missoula, Mont., low at $135,668.

100 tons, school construction, Bellingham, Wash.; bids in.

PLATES . . .

PLATES PLACED

4410 tons, high tensile, grade HY-80, black, naval shipyard, Portsmouth, N. H., to Lukens Steel Co., Coatesville, Pa.

PLATES PENDING

Unstated, 13,000 ft of 30-in. supply pipe, including a crossing of the Willamette River; steel enamel or concrete cylinders; bids to Byron Price, superintendent, Eugene, Oreg., Aug. 7.

INTRODUCTION TO THE STUDY OF HEAT TREATMENT OF METALLURGICAL PRODUCTS

By Albert Portevin

Fundamental knowledge and essential principles of heat treatment of steel are presented in simple and understandable manner. Research engineers, metallurgical students and steel plant metallurgists engaged in metallurgical investigations and the heat treatment of ferrous and non-ferrous metals will find this book of inestimable value.

246 pages **4 tables**
69 illustrations **Price $5.00 Postpaid**

THE PENTON PUBLISHING CO.
Book Department, 1213 W. 3rd St., Cleveland 13, O

IMPERIAL

MANUFACTURERS' WIRE—
Carbon, Stainless & Alloy Steels

■ The uniform excellence of wire bearing this label reflects the skill of metallurgical engineers and craftsmen specially trained in the art of wire making.

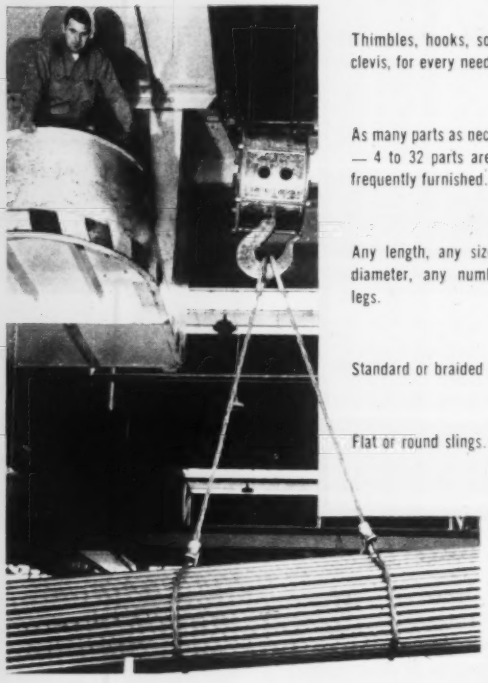
■ Precision quality wire has been our exclusive business for more than 50 years.

INDIANA STEEL & WIRE CO., INC.
MUNCIE, INDIANA

ACRO WELDER MFG. CO.
MILWAUKEE
WELDING ENGINEERS
MACHINERY BUILDERS
ESTABLISHED 1936

Whatever your load . . .

WE'LL ENGINEER YELLOW STRAND BRAIDED SAFETY SLINGS TO YOUR JOB!



Thimbles, hooks, sockets, clevis, for every need.

As many parts as necessary — 4 to 32 parts are most frequently furnished.

Any length, any size, any diameter, any number of legs.

Standard or braided slings.

Flat or round slings.

Modern industry demands specialized tools for maximum production. Efficient, safe and fast materials handling likewise requires specialized equipment – and this applies to specialized wire rope slings for each lifting need.

We'll help you correctly solve each of your sling problems. Available to you are the services of our highly skilled staff of engineers . . . experienced in all types of sling design and manufacture, and ready to apply safe, dependable, long-life Yellow Strand to your job.

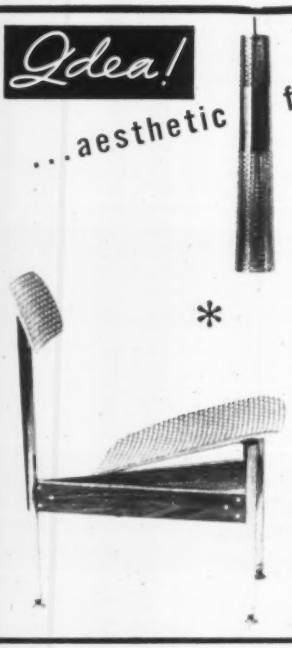
For complete details, call your nearby Broderick & Bascom industrial and construction equipment distributor, or contact your nearest B & B branch or our Engineering Department in St. Louis. Broderick & Bascom Rope Co., 4203 Union Blvd., St. Louis 15, Mo.

Yellow Strand®

Wire Rope

Idea! . . . aesthetic functionalism

with H&K perforated metals



The perception of the Industrial Designer and other men of ideas, in the selection and adaptation of aesthetically interesting and functionally honest mediums, is constantly proving the versatility of H & K Perforated Metals.

For more than 75 years, Harrington & King has helped to broaden the horizons of industrial design through creation of unlimited patterns in both metallic and non-metallic materials. If perforated materials can be utilized in your product, our sales engineers will be pleased to work with you.

*Product Development by William M. Schmidt Associates.

Send today for General Catalog

THE **Harrington & King** PERFORATING CO., INC.

Chicago Office and Warehouse
5627 Fillmore St., Chicago 44

New York Office and Warehouse
118 Liberty St., New York 6

HOT DIP GALVANIZING

JOSEPH P. CATTIE & BROTHERS, INC.

2520 East Hagert Street

Phone: Re-9-8911 **Philadelphia 25, Pa.**

MODERN ELECTROPLATING

563 PAGES ILLUSTRATED

Price $9.50 Postpaid

BY ALLEN G. GRAY

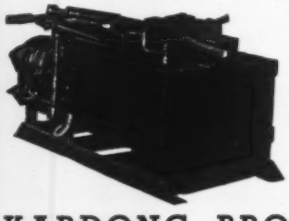
Brings you a complete, up-to-date one-volume summary of current industrial electroplating processes. The only book that emphasizes both practical aspects and basic theory.

The Penton Publishing Company, Book Department, 1213 West Third St., Cleveland 13, Ohio.

KARDONG CIRCLE BENDER

For Concrete Reinforcing Bars

This is a powerful and fast machine for heavy duty work in both fabricating plants or in the field where large tonnage is required. It will handle as high as 20 tons a day. Circles of any size required in concrete reinforcing work from 18 inches in diameter up can be bent on this machine. It will bend bars with two or more radii on the same bar without stopping the machine.



Made in two sizes

Model "C" Capacity 1¼ inch
Model "CA" Capacity 1 inch

Write for catalog of our complete line of reinforcing bar benders.

KARDONG BROTHERS, INC.
MINNEAPOLIS 13, MINN.

STEELMAKING SCRAP PRICE COMPOSITE
Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL.
1957
1958
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
July 30 1958 $40.33
Week Ago $37.67
Month Ago $35.67
Year Ago $54.50
July Avg. $37.62

Scrap Advancing with Ingot Rate

STEEL's composite on the prime grade rises to $40.33, up $2.66 a ton. Mill buying continues restricted but shows signs of opening up as steel market activity gains

Scrap Prices, Page 142

Chicago—The district scrap market continues to boil, and open hearth and electric furnace grades have mounted to the highest price level this year. In a little over two months, prices on leading grades have swept upward at least $8 a ton. Two factors are responsible—a better midyear steelmaking rate than had been expected and a none-too-plentiful supply. Plant closings for vacations have reduced scrap generation sharply. Scrap consumption is bound to increase, with higher steelmaking rates a certainty in the fourth quarter. Integrated mills will likely use more hot metal in their charges, and one mill has already put one blast furnace back into production.

Pittsburgh — Prices are edging higher amidst speculation that Fisher Body bundles will bring as much as $45 a ton, up $5 to $6 from a month ago. Dealers are holding onto their scrap until the auto lists close. Strength at Cleveland and the Valley is influencing bullishness here, and prices on the steel grades are nominally higher.

Cleveland — Buying by Valley mills has confirmed the higher prices on the No. 1 grades of heavy melting established a week ago when a local mill placed a representative tonnage. The market is bullish, though buying is not particularly active. Most of the recent activity has been in the major steelmaking grades, but prices on the other grades are up sympathetically. Bids on auto lists are expected to put No. 1 factory bundles at $44-$45. The auto lists are reported relatively light.

Philadelphia—The scrap market is strong, with sellers having to pay more in covering on old orders than they received. Contributing to the strength: Schuman Plan countries purchased about 140,000 tons of steel scrap, No. 1 grades and No. 2 heavy melting steel, for delivery through August and September.

More active steel mill operations, and higher prices in the Midwest also are factors for strength. Practically all domestic prices here are nominal; low phos structurals and plate are higher on trading at $42-$43. Strength in turnings is indicated by the purchase by a dealer of 150 tons of machine shop turnings at $18.58, f.o.b. Frankford, Pa. This means the equivalent of around $21.50-$22, delivered, consumer, plus profit.

New York — Brokers have advanced buying prices on No. 1 heavy melting steel and No. 1 bundles to $31-$32, and on No. 2 heavy melting steel to $29. Prices on all other steel grades are unchanged, but stainless scrap prices have been advanced $10 a ton on 18-8 sheets, clips and solids to $165-$170, on purchasing by a Pittsburgh mill. Other stainless grades are steady.

Detroit—July auto lists closed last Wednesday with low tonnages bringing increased dealer activity on open market speculation. Chrysler put up 158 cars of No. 1 busheling, bundles, and plates—roughly 25 per cent less than the 200 cars it offered a month ago. (This excludes Chrysler's Ohio stamping plants.)

As a result of the low tonnages, dealers are talking about $38-$40 for No. 1 bundles, although mills have said that if prices got too high they'd back off, which would put brokers in a ticklish spot. Broker scrap piles are heavy.

Houston—The leading mill here has offered to buy a limited tonnage of scrap at prices unchanged from those paid in July. Earlier, it had extended shipping dates on its July purchase into August. Its inventory is estimated sufficient for 98 days of consumption.

An exporter continues to buy Gulf Coast scrap for shipment to Spain at prices in line with those paid by the Texas mill. Mexican demand

(*Please turn to Page* 147)

HAWKRIDGE METALS CORPORATION
North Hampton, New Hampshire
Producers and Sellers of Ductile
TITANIUM & ZIRCONIUM POWDERS
ALL MESHES
HIGH PURITY 99.2%
COMMERCIAL 98.6%

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, July 30, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

July 30	$40.33
July 23	37.67
July Avg.	37.62
Aug. 1957	53.33
Aug. 1953	43.40

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	*41.00-42.00†*
No. 2 heavy melting	*35.00-34.00*
No. 1 dealer bundles	*41.00-42.00†*
No. 2 bundles	*31.00-32.00*
No. 1 busheling	*41.00-42.00†*
No. 1 factory bundles	*44.00-45.00†*
Machine shop turnings	16.00-17.00
Mixed borings, turnings	16.00-17.00
Short shovel turnings	20.00-21.00
Cast iron borings	21.00-21.00
Cut structurals:	
2 ft and under	42.00-43.00
3 ft lengths	40.00-41.00
Heavy turnings	35.00-36.00
Punchings & plate scrap	42.00-43.00
Electric furnace bundles	42.00-43.00

Cast Iron Grades

No. 1 cupola	40.00-41.00
Stove plate	40.00-41.00
Unstripped motor blocks	23.00-24.00
Clean auto cast	39.00-40.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	43.00-44.00
Rails, 2 ft and under	54.00-55.00
Rails, 18 in. and under	55.00-56.00
Random rails	51.00-52.00
Railroad specialties	48.00-49.00
Angles, splice bars	44.00-45.00
Rails, rerolling	58.00-59.00

Stainless Steel Scrap

18-8 bundles & solids	*190.00-195.00*
18-8 turnings	100.00-105.00
430 bundles & solids	*110.00-115.00*
430 turnings	50.00-52.00

CHICAGO

No. 1 hvy melt., indus.	*43.00-44.00*
No. 1 hvy melt., dealer	*41.00-42.00*
No. 2 heavy melting	*36.00-37.00*
No. 1 factory bundles	*48.00-49.00*
No. 1 dealer bundles	*42.00-43.00*
No. 2 bundles	*29.00-30.00*
No. 1 busheling, indus.	*43.00-44.00*
No. 1 busheling, dealer	*41.00-42.00*
Machine shop turnings	*21.00-22.00*
Mixed borings, turnings	*23.00-24.00*
Short shovel turnings	*23.00-24.00*
Cast iron borings	*23.00-24.00*
Cut structurals, 3 ft	*47.00-48.00*
Punchings & plate scrap	*48.00-49.00*

Cast Iron Grades

No. 1 cupola	44.00-45.00
Stove plate	42.00-43.00
Unstripped motor blocks	*35.00-36.00*
Clean auto cast	50.00-51.00
Drop broken machinery	50.00-51.00

Railroad Scrap

No. 1 R.R. heavy melt.	*46.00-47.00*
R.R. malleable	56.00-57.00
Rails, 2 ft and under	59.00-60.00
Rails, 18 in. and under	60.00-61.00
Angles, splice bars	*54.00-55.00*
Axles	65.00-66.00
Rails, rerolling	61.00-62.00

Stainless Steel Scrap

18-8 bundles & solids	180.00-185.00
18-8 turnings	95.00-100.00
430 bundles & solids	95.00-100.00
430 turnings	50.00-55.00

YOUNGSTOWN

No. 1 heavy melting	*43.00-44.00*
No. 2 heavy melting	30.00-31.00†
No. 1 busheling	*43.00-44.00*
No. 1 bundles	*43.00-44.00*
No. 2 bundles	30.00-31.00†
Machine shop turnings	12.00-13.00
Short shovel turnings	17.00-18.00
Cast iron borings	17.00-18.00
Low phos.	*45.00-46.00*
Electric furnace bundles	*45.00-46.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*44.00-45.00*

CLEVELAND

No. 1 heavy melting	38.00-39.00
No. 2 heavy melting	26.00-27.00
No. 1 factory bundles	41.00-42.00
No. 1 bundles	38.00-39.00
No. 2 bundles	28.00-29.00
No. 1 busheling	38.00-39.00
Machine shop turnings	9.00-10.00
Short shovel turnings	13.00-14.00
Mixed borings, turnings	13.00-14.00
Cast iron borings	13.00-14.00
Cut foundry steel	37.00-38.00
Cut structurals, plates 2 ft and under	*45.00-46.00*
Low phos, punchings & plate	*40.00-41.00*
Alloy free, short shovel turnings	16.00-17.00
Electric furnace bundles	*40.00-41.00*

Cast Iron Grades

No. 1 cupola	*43.00-44.00*
Charging box cast	*34.00-35.00*
Heavy breakable cast	*34.00-35.00*
Stove plate	*45.00-46.00*
Unstripped motor blocks	*26.00-27.00*
Brake shoes	*34.00-35.00*
Clean auto cast	*46.00-47.00*
Burnt cast	*31.00-32.00*
Drop broken machinery	*49.00-50.00*

Railroad Scrap

R.R. malleable	60.00-61.00
Rails, 2 ft and under	*57.00-58.00*
Rails, 18 in. and under	*58.00-59.00*
Rails, random lengths	*50.00-51.00*
Cast steel	*47.00-48.00*
Railroad specialties	*49.00-50.00*
Uncut tires	*41.00-42.00*
Angles, splice bars	*48.00-49.00*
Rails, rerolling	*54.00-55.00*

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	170.00-175.00
18-8 turnings	95.00-100.00
430 clips, bundles, solids	80.00-90.00
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	33.00
No. 2 heavy melting	30.00
No. 1 bundles	34.00
No. 2 bundles	23.00
No. 1 busheling	33.00
Machine shop turnings	16.00†
Short shovel turnings	18.00†

Cast Iron Grades

No. 1 cupola	*44.00*
Charging box cast	*36.00*
Heavy breakable cast	35.00
Unstripped motor blocks	36.00
Clean auto cast	44.00
Stove plate	*44.00*

Railroad Scrap

No. 1 R.R. heavy melt.	45.00
Rails, 18 in. and under	50.00
Rails, random lengths	48.00
Rails, rerolling	*60.00*
Angles, splice bars	47.00

BIRMINGHAM

No. 1 heavy melting	*33.00-34.00*
No. 2 heavy melting	27.00-28.00
No. 1 bundles	*33.00-34.00*
No. 2 bundles	*20.00-21.00*
No. 1 busheling	*33.00-34.00*
Cast iron borings	12.00-13.00
Machine shop turnings	*21.00-22.00*
Short shovel turnings	*22.00-23.00*
Bars, crops and plates	*42.00-43.00*
Structurals & plates	*40.00-41.00*
Electric furnace bundles	34.00-35.00
Electric furnace:	
2 ft and under	35.00-36.00
3 ft and under	34.00-35.00

Cast Iron Grades

No. 1 cupola	52.00-53.00
Stove plate	51.00-52.00
Unstripped motor blocks	41.00-42.00
Charging box cast	22.00-23.00
No. 1 wheels	*38.00-39.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*35.00-36.00*
Rails, 18 in. and under	49.00-50.00
Rails, rerolling	*58.00-59.00*
Rails, random lengths	*45.00-46.00*
Angles, splice bars	*43.00-44.00*

PHILADELPHIA

No. 1 heavy melting	*36.00†*
No. 2 heavy melting	*32.00†*
No. 1 bundles	*36.00†*
No. 2 bundles	*24.00†*
No. 1 busheling	*36.00†*
Electric furnace bundles	*38.00†*
Mixed borings, turnings	*19.00†*
Short shovel turnings	*21.00†*
Machine shop turnings	*19.00†*
Heavy turnings	*30.00†*
Structural & plate	*42.00-43.00*
Couplers, springs, wheels	43.50
Rail crops, 2 ft & under	55.00-56.00

Cast Iron Grades

No. 1 cupola	*38.00-40.00*
Heavy breakable cast	41.00
Malleable	58.00-59.00
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*31.00-32.00*
No. 2 heavy melting	*29.00*
No. 1 bundles	*31.00-32.00*
No. 2 bundles	16.00-17.00
Machine shop turnings	8.00-9.00
Mixed borings, turnings	9.00-10.00
Short shovel turnings	11.00-12.00
Low phos (structurals & plates)	34.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	*165.00-170.00*
18-8 borings, turnings	50.00-55.00
410 sheets, clips, solids	50.00-55.00
430 sheets, clips, solids	60.00-65.00

BUFFALO

No. 1 heavy melting	27.00-28.00
No. 2 heavy melting	23.00-24.00
No. 1 bundles	27.00-28.00
No. 2 bundles	21.00-22.00
No. 1 busheling	27.00-28.00
Mixed borings, turnings	13.00-14.00
Machine shop turnings	10.00-11.00
Short shovel turnings	14.00-15.00
Cast iron borings	13.00-14.00
Low phos, structurals and plate, 5 ft and under	32.00-33.00
2 ft and under	36.00-37.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	38.00-39.00
No. 1 machinery	42.00-43.00

Railroad Scrap

Rails, random lengths	46.00-47.00
Rails, 3 ft and under	52.00-53.00
Railroad specialties	36.00-37.00

CINCINNATI

(Buyers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*36.00-37.00*
No. 2 heavy melting	*29.50-30.50*
No. 1 bundles	*36.00-37.00*
No. 2 bundles	*24.00-25.00*
No. 1 busheling	*36.00-37.00*
Machine shop turnings	*14.00-15.00*
Mixed borings, turnings	*14.50-15.50*
Short shovel turnings	*16.50-17.50*
Cast iron borings	*14.00-15.00*
Low phos. 18 in.	*40.00-41.00*

Cast Iron Grades

No. 1 cupola	40.00-41.00
Heavy breakable cast	32.00-33.00
Charging box cast	32.00-33.00
Drop broken machinery	44.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt.	*40.00-41.00*
Rails, 18 in. and under	*53.00-54.00*
Rails, random lengths	*43.00-44.00*

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	32.00
No. 2 bundles	21.00†
Machine shop turnings	14.00
Short shovel turnings	17.00
Low phos. plates & structurals	38.50†

Cast Iron Grades

No. 1 cupola	42.00
Heavy breakable	30.00†
Unstripped motor blocks	36.00

Railroad Scrap

No. 1 R.R. heavy melt	34.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*23.00-23.50*
No. 2 heavy melting	*19.00-19.50*
No. 1 bundles	*23.00-23.50*
No. 2 bundles	*15.00-15.50*
No. 1 busheling	*23.00-23.50*
Machine shop turnings	6.00-7.00
Mixed borings, turnings	6.00-7.00
Short shovel turnings	7.00-8.00
No. 1 cast	28.00-29.00
Mixed cupola cast	27.00-28.00
No. 1 machinery cast	36.00-38.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*31.00-32.00*
No. 2 heavy melting	*23.00-24.00*
No. 1 bundles	*33.00-24.00*
No. 2 bundles	*21.00-22.00*
No. 1 busheling	*32.00-33.00*
Machine shop turnings	*9.00-10.00*
Mixed borings, turnings	*10.00-11.00*
Short shovel turnings	*11.00-12.00*
Punchings & plate	*32.00-3300*

Cast Iron Grades

No. 1 cupola	*39.00-40.00*
Stove plate	29.00-30.00
Charging box cast	29.00-30.00
Heavy breakable	28.00-29.00
Unstripped motor blocks	16.00-17.00
Clean auto cast	*38.00-39.00*

SEATTLE

No. 1 heavy melting	30.00†
No. 2 heavy melting	28.00†
No. 1 bundles	22.00†
No. 2 bundles	20.00†
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00

Cast Iron Grades

No. 1 cupola	31.00
Heavy breakable cast	28.00
Unstripped motor blocks	23.00
Stove plate (f.o.b. plant)	21.00

LOS ANGELES

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	28.00
No. 2 bundles	20.00
Machine shop turnings	11.00
Shoveling turnings	11.00
Cast iron borings	11.00
Cut structurals and plate 1 ft and under	45.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	41.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	42.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

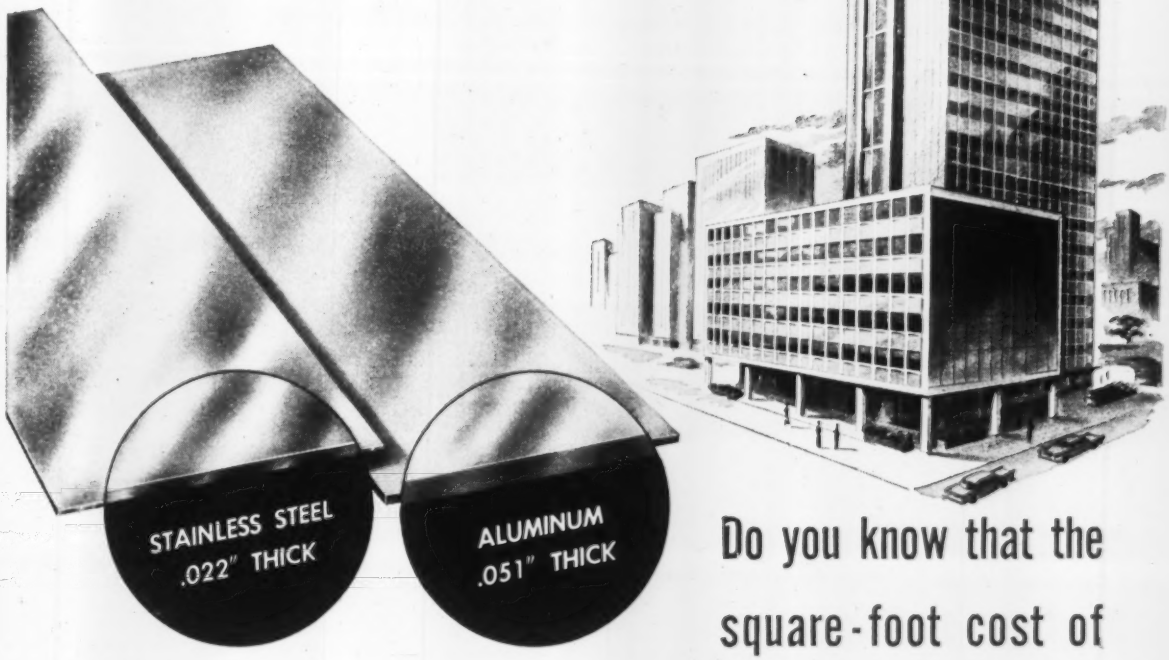
No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Mixed borings, turnings	15.00
Busheling, new factory: Prepared	30.00
Unprepared	24.00
Short steel turnings	19.00

Cast Iron Grades‡

No. 1 machinery cast	45.00-50.00

†Nominal.
‡F.o.b. Hamilton, Ont.

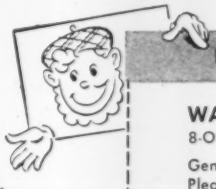
STAINLESS COSTS LESS THAN ALUMINUM—



Do you know that the square-foot cost of stainless steel sheet for curtain wall panels is usually equal to or lower than aluminum when compared in thicknesses of equal indentation resistance? For example, Type 302 stainless steel, .022″ thick is equal to .051″ aluminum and costs only 62¢ per sq. ft., as compared to 67¢ per sq. ft. for 3003-H14 anodized aluminum.

For additional information on all gauges, fill in and mail the coupon.

Washington Steel Corporation
WASHINGTON, PENNSYLVANIA



MAIL COUPON *Today!*

WASHINGTON STEEL CORPORATION
8-O Woodland Avenue, Washington, Pa.

Gentlemen:
Please send me full information on comparative costs of stainless steel vs. aluminum for curtain wall panels.

Name_____
Position_____
Company_____
Street_____
City_____ Zone____ State_____

Barter Program Likely

Chances are good Congress will override administration's objections and reinstate workable program. Seaton minerals plan revised again by legislators

Nonferrous Metal Prices, Pages 146 & 147

ODDS are at least 60-40 that legislation putting teeth back into the barter program (foreign origin metal is swapped for surplus U. S. agricultural products) will come out of this session of Congress.

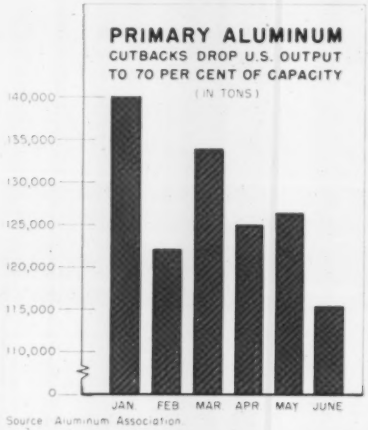
Strong Support—On July 23, the House voted 195 to 52 to tack stronger barter provisions onto the bill for the disposal of farm surpluses, already passed by the Senate. The provisions would: 1. Prohibit the secretary of agriculture from limiting areas where barter contracts could be made. 2. Authorize U. S. processing of foreign origin ore. 3. Request the secretary of agriculture to barter up to $500 million annually.

What It Means—A strong barter program would particularly aid U. S. lead and zinc companies. Reasons: 1. It would drain off surplus metal from the world market, some of which has been coming into the U. S. below the domestic price. 2. U. S. producers could bring foreign ore to this country, convert it to metal, and sell it to Uncle Sam.

Reaction—Producers have mixed emotions about reviving barter. They acknowledge that it would strengthen the world market and help buoy the shaky profit situation. On the other side of the coin, they believe barter would only postpone the industry's supply-demand problem and would stimulate production to "unrealistic levels."

Chances for Passage — The bill goes to a House-Senate conference which is expected to report out a measure acceptable to both houses. "Chances are good for passage of the House bill, with one or two compromise modifications," a Congressional source told STEEL. Observers expect the Senate to offer approval of the main barter provisions in return for guarantees disallowing "dumping" which might affect trade of "friendly" countries. House proponents point out that the Senate defeated a stronger barter proposal by only 3 votes earlier this year.

The administration is on record as opposing barter. But strong segments in both houses are irked by Agriculture Department interpretations that make the program nearly inoperable. Says one House source: "We hope to take the bartering authority away from the secretary of agriculture and place it in Congress where it belongs."



Source: Aluminum Association

Seaton Plan Revised

Second guessing House sentiment on Interior Secretary Fred Seaton's plan to stabilize lead, zinc, acid-grade fluorspar, and tungsten, and stockpile copper, the Interior & Insular Affairs Committee refused to go along with recommendations made last week by its own Mines & Mining Subcommittee (STEEL, July 28, p. 36). The full committee voted to resume subsidy payments of 3.9 cents for lead and 2.9 cents for zinc, instead of the 4 cents recommended by the subcommittee. (Both Interior and State Departments thought 4 cents too high.)

Production bonuses were O.K.'d for beryl, chromite, and columbium-tantalum, but the bonus for chromite was cut from $46 a ton to $35, by a vote of 13 to 7. The committee accepted the subcommittee recommendation to kill the $350 million borrowing authority asked for in the Senate version of the bill, but instead of allowing an open ended authority for appropriation, it set a limit of $650 million to be spent on the five-year program. (If the bill is passed by both houses, another bill providing the money must be passed.)

Finally, Interior will be required to report every six months to the proper appropriation and mineral committees of both houses on the progress of the program. The committee passed the bill (S. 4036) by a vote of 17 to 4 and sent it to the House, refusing to consider arguments that it was too limited in its approach to gain full House support. Even if the two versions are worked out in conference between the two bodies, several committee members voiced the opinion that it may be vetoed by President Eisenhower.

NONFERROUS PRICE RECORD

	Price July 29	Last Change	Previous Price	June Avg	May Avg	July, 1957 Avg
Aluminum	24.00	Apr. 1, 1958	26.00	24.000	24.000	25.000
Copper	26.50	July 18, 1958	26.00-26.50	25.400	24.433	28.822
Lead	10.80	July 1, 1958	11.30	11.040	11.512	13.800
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	96.25	July 25, 1958	96.00	94.701	94.510	96.576
Zinc	10.00	July 1, 1957	10.50	10.000	10.000	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

ROY T. HURLEY

Portrait by Bachrach

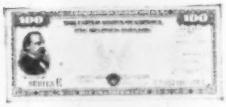
"More than 11,000 of our 19,000 employees are now buying U.S. Savings Bonds Regularly"

"We are delighted to see the steady increase in the number of our people who are buying U.S. Savings Bonds through the payroll plan. More than 59% of our employees are now enrolled.

"To enjoy the benefits of peace and freedom, we must provide for our own personal financial security and, at the same time, create the power for peace through support of an adequate defense program. Systematic savings through the Savings Bond program will keep us ahead of any potential aggressor and help insure the soundness of an economic system which encourages and permits each of us to look forward to a bright, secure future."

ROY T. HURLEY, *Chairman and President, Curtiss-Wright Corporation*

Today there are more Payroll savers than ever before in peacetime. If employee participation in *your* Payroll Savings Plan is less than 50% . . . or if *your* employees now do not have the opportunity to build for their future through the systematic purchase of U.S. Savings Bonds, give your State Director an opportunity to help. Look him up in your phone book. Or write: Savings Bonds Division, U.S. Treasury Dept., Washington, D.C.



STEEL
The Metalworking Weekly

THE U. S. GOVERNMENT DOES NOT PAY FOR THIS ADVERTISEMENT. THE TREASURY DEPARTMENT THANKS, FOR THEIR PATRIOTISM, THE ADVERTISING COUNCIL AND THE DONOR ABOVE

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.00; ingots, 26.10, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 27.90; No. 43, 27.70; No. 195, 28.70; No. 214, 29.50; No. 356, 27.90, 30-lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50; f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per ton, ton lots.

Cadmium: Sticks and bars, $1.55 per lb deld.

Cobalt: 97.99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 26.50 deld.; custom smelters, 26.50; lake, 26.50 deld.; fire refined, 26.25 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 10.80; chemical, 10.90; corroding, 10.90, St. Louis. New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. thick, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld., AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $230-235 per 76-lb flask.

Molybdenum: Unalloyed turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty, New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $15-19 per troy oz.

Platinum: $62-65 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market 88.625 per troy oz.

Sodium: 17.00 c.l.; 19.00-19.50 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 95.75.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), 2.05; grade A-2 (0.5% Fe max.), $1.85 per lb.

Tungsten: Powder, 98.8%, carbon reduced. 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $.85.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.00; special high grade, 11.25 deld. Diecasting alloy ingot No. 3, 12.75; No. 2, 13.25; No. 5, 13.00 deld.

Zirconium: Sponge, commercial grade, $5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 22.50-24.00; No. 12 foundry alloy (No. 2 grade), 21.25-21.50; 5% silicon alloy, 0.60 Cu max., 24.00-24.25; 13 alloy 0.60 Cu max., 24.00-24.25; 195 alloy, 24.25-25.50; 108 alloy, 21.75. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 22.25; grade 2, 21.25; grade 3, 20.00; grade 4, 17.25.

Brass Ingot: Red brass, No. 115, 27.00; tin bronze, No. 225, 36.00; No. 245, 30.75; high-leaded tin bronze, No. 305, 31.25; No. 1 yellow, No. 405, 22.75; manganese bronze, No. 421, 24.50.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.80, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.78, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 31.855; l.c.l., 32.48. Weatherproof, 20,000-lb lots, 33.66, l.c.l., 34.41, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $15.50 per cwt; pipe, full coils, $15.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-11.00; forging billets, $4.10-4.35; hot-rolled and forged bars, $5.25-6.35.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip $15.90-31.25; forged or H.R. bars, $11.00-16.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	209

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.249-0.136	41.10-45.60	.....
0.135-0.096	41.60-46.70	.....
0.125-0.096	.....	38.50-39.10
0.096-0.077	42.30-48.50	38.60-39.30
0.076-0.061	42.90-50.80	38.80-40.00
0.060-0.048	43.60-53.10	39.40-41.10
0.047-0.038	44.20-55.90	39.90-32.50
0.037-0.030	44.60-60.90	40.30-44.30
0.029-0.024	45.20-52.70	40.60-45.00
0.023-0.019	46.20-56.10	41.70-43.40
0.018-0.017	47.00-53.40	42.30-44.00
0.016-0.015	47.90-54.30	43.10-44.80
0.014	48.90	44.10-45.80
0.013-0.012	50.10	44.80
0.011	51.10	46.00
0.010-0.0095	52.60	47.40
0.009-0.0085	53.90	48.90
0.008-0.0075	55.50	50.10
0.007	57.00	51.60
0.006	58.60	53.00

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
*100-F, 3003-F	41.70	46.50
5050-F	42.80	47.60
3004-F	43.80	49.50
5052-F	44.40	50.20
*6061-T6	44.90	51.00
2024-T4	48.60	55.40
7075-T6*	56.40	64.00

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	76.20	73.20	....	....
0.156	64.20	61.40	....	....
0.172	....	61.40	....	....
0.188	64.20	61.40	....	79.60
0.203	64.20	61.40	....	....
0.219-0.234	61.00	59.50	....	....
0.250	61.00	59.50	88.40	75.90
0.266-0.281	61.00	59.50	....	....
0.313	61.00	59.50	81.40	72.20
0.344	60.50	....	81.40	....
Cold-Finished				
0.375-0.547	60.50	59.30	72.80	67.80
0.563-0.688	60.50	59.30	69.10	63.50
0.719	....	57.70	....	....
0.750-1.000	59.00	57.70	62.90	59.70
1.063	59.00	57.70	....	57.60
1.250-1.500	56.60	55.40	60.80	57.60
Rolled				
1.563	55.00	53.70	....	....
1.625-2.000	54.30	52.90	59.60	55.50
2.063	....	51.40	....	....
2.125-2.500	52.80	51.40	....	55.50
2.500-3.000	51.20	49.70	....	55.50
3.250-3.375	....	49.70	....	....

Forging Stock: Round, Class 1, random lengths, diam. 0.688-8 in., "F" temper; 2014, 41.50-54.30; 6061, 40.90-54.30; 70.75, 42.90-56.30; 7070, 43.40-56.80.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ¾ in., 18.60; 1 in., 29.35; 1¼ in., 39.75; 1½ in., 47.50; 2 in., 57.40; 4 in., 157.60; 6 in., 282.95; 8 in., 425.80.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.00-43.50	58.60-62.80
12-14	42.00-43.50	59.30-63.80
15-17	42.00-43.50	60.50-65.50
18-20	42.50-44.00	62.50-68.10

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70-60-71.60. Tooling plate, .25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 19.75-20.25; No. 2 heavy copper and wire, 18.00-18.50; light copper, 16.00-16.50; No. 1 composition red brass, 16.00-16.50; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 26.50c)		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	49.63b	46.86c	....	49.82	22.500	22.500	21.750
Yellow Brass	43.57	30.28d	44.11	46.48	17.000	16.750	15.250
Low brass, 80%	46.03	45.97	46.57	48.84	19.000	18.750	18.250
Red Brass, 85%	46.89	46.83	47.43	49.70	19.750	19.500	19.000
Com. Bronze, 90%	48.30	48.24	48.84	50.86	20.625	20.375	19.875
Manganese Bronze	51.52	45.74	56.18	....	15.625	15.375	14.875
Muntz Metal	45.95	41.76	....	....	15.875	15.625	15.125
Naval Brass	47.83	42.14	54.89	50.99	15.625	15.375	14.875
Silicon Bronze	54.37	53.56	54.41	56.29	22.125	21.875	21.125
Nickel Silver, 10%	58.82	61.15	61.15	....	22.000	21.750	11.000
Phos. Bronze, A-5%	68.59	69.09	69.09	70.27	23.375	23.125	22.125

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

positions turnings, 15.00-15.50; new brass clippings, 13.50-14.00; light brass, 9.50-10.00; heavy yellow brass, 11.00-11.50; new brass rod ends, 11.50-12.00; auto radiators, unsweated, 12.00-12.50; cocks and faucets, 13.00-13.50; brass pipe, 13.00-13.50.

Lead: Heavy, 6.75-7.00; battery plates, 2.50-2.75; linotype and stereotype, 9.25-9.75; electrotype, 7.50-8.00; mixed babbitt, 9.00-9.50.

Monel: Clippings, 28.00-29.00; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods, 28.00-29.00.

Nickel: Sheets and clips, 42.00-45.00; rolled anodes, 42.00-45.00; turnings, 37.00-40.00; rod ends, 42.00-45.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

Aluminum: Old castings and sheets, 9.50; clean borings and turnings, 6.50; segregated low copper clips, 12.50-13.50; segregated high copper clips, 11.50-12.00; mixed low copper clips, 12.50-13.00; mixed high copper clips, 11.00-11.50.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 10.50-11.00; clean borings and turnings, 9.50-10.00; segregated low copper clips, 16.00-16.50; segregated high copper clips, 14.50-15.00; mixed low copper clips, 15.00-15.50; mixed high copper clips, 14.00-14.50.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 9.00-9.50; clean borings and turnings, 6.00-6.50; segregated low copper clips, 12.50-13.00; segregated high copper clips, 11.00-11.50; mixed low copper clips, 11.50-12.00; mixed high copper clips, 10.50-11.00.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5 % Be, 52.50; light scrap, 47.50; turnings and borings, 32.50.

Copper and Brass: No. 1 heavy copper and wire, 22.50; No. 2 heavy copper and wire, 21.50; light copper, 19.25; refinery brass (60% copper) per dry copper content, 21.00.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 22.50; No. 2 heavy copper and wire, 21.50; light copper, 19.25; No. 1 composition borings, 19.00; No. 1 composition solids, 19.50; heavy yellow brass solids, 13.50; yellow brass turnings, 12.50; radiators, 15.50.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.55.

Copper: Flat-rolled, 43.29; oval, 41.50, 5000-10,000 lb; electrodeposited, 35.25, 2000-5000 lb lots; cast, 37.75, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 114.50; 200-499 lb, 113.00; 500-999 lb, 112.50; 1000 lb or more, 112.00.

Zinc: Balls, 16.00; flat tops, 16.00; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.55 per lb in 100-lb drums.

Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.90; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 14.05; 2000-5900 lb, 12.05; 6000-11,900 lb, 11.80; 12,000-22,900 lb, 11.55; 23,000 lb or more, 11.05.

Nickel Chloride: 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400-999 lb, 43.50; 10,000 lb or more, 40.50.

Nickel Sulphate: 5000-22,000 lb, 29.00; 23,000-35,900 lb, 28.50; 36,000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.

Sodium Stannate: Less than 100 lb, 76.30; 100-600 lb, 67.20; 700-1900 lb, 64.50; 2000-9900 lb, 62.60; 10,000 lb or more, 61.30.

Stannous Chloride (anhydrous): 25 lb, 100.514; 100 lb, 100.465; 400 lb, 100.440; 800-19,900 lb, 100.032; 20,000 lb or more, 97.10.

Stannous Sulphate: Less than 50 lb, 100.367; 50 lb, 100.067; 100-1900 lb, 100.047; 2000 lb or more, 100.027.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page 141*)

developed last week, buyers offering $41, delivered to the border at Laredo, for No. 1 heavy melting, and $37 for No. 2.

Dealers are bullish, but shipments are slow. Output of industrial scrap is off, and the flow of country material is thin.

Boston—Scrap prices are slightly stronger, reflecting export buying for August, and a firmer eastern Pennsylvania market. Shipments to that area are hampered by high freight charges. Light demand is being filled without drawing heavily on high-freight areas. With the 3 per cent federal tax dropped, the rate to eastern Pennsylvania is $10.47. Buying by district consumers is slow, but borings and turnings are slightly firmer.

Birmingham—The scrap market is showing new strength although prices have not advanced as much as they have elsewhere. A large open hearth consumer bought No. 1 heavy melting at $2 a ton above its last price. Some other items went up $1 to $3, while others held unchanged. Cast grades continue strong, with Anniston prices up $1. Exporters are having difficulty covering recent commitments.

Youngstown — Two major steelmakers here last week placed orders for No. 1 heavy melting steel at $43, $4 above the price last paid in this district, and $7 above prices paid in June. Local scrap yards hold large stocks of No. 2 material. One of the major buyers of that grade hasn't been in the market for seven or eight months.

Cincinnati — Prices are stronger. Broker buying has pushed the steelmaking grades up another $1. Area mills are expected to enter the market for their August requirements. No. 1 heavy melting is quoted $36-$37, brokers' buying price.

Buffalo — The scrap market is bullish, but there have been no sales at higher prices. On the basis of sharp jumps in other markets, some local dealers say a $5 a ton increase is in prospect here. A test is expected this week. Dealers have boosted their buying prices to attract supplies.

St. Louis—The local scrap market is strong, and prices are tending higher. Most broker buying is from outside the district, local agents handling sales from Minneapolis, Memphis, Nashville, and Louisville. Several cast iron grades are up $1 a ton, including No. 1 cupola, charging box cast and stove plate. Rerolling rails at $60 are up $1.75 a ton.

Los Angeles—Most scrapyards are operating on reduced schedules. Trading is sluggish, but a pickup is seen in fourth quarter when the mills are expected to operate on substantially higher levels.

WANTED — ONE USED NATIONAL
5/8" TRACK SPIKE MACHINE
Reply Box 681, STEEL — Penton Bldg., Cleveland 13, Ohio

WANTED
LATE MODEL PLATE SHEAR
10' to 12' WIDE
¾" to 1" CAPACITY
PRODUCTION STEEL PRODUCTS, INC.
20001 Sherwood Ave. Detroit 34, Michigan

GET CASH NOW
for your new surplus motors, controls and transformers!
AVAILABLE: NEW MOTORS
Over 5,000 new motors in stock, from ½HP to 200HP. Special low prices
Write, wire or phone collect!
AJAX ELECTRIC MOTOR CORP.
P.O. Box 262, Rochester 14, N.Y.
Long Distance Phone LO 133

CLASSIFIED

Positions Wanted

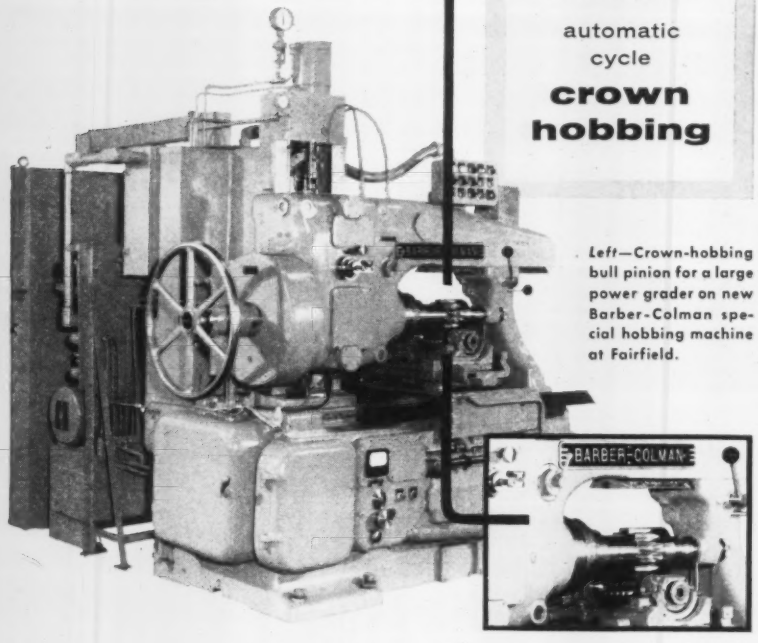
STRUCTURAL STEEL FABRICATOR experience shop, production, heavy structural, construction, and chemical equipment. Available immediately. Reply Box 682, STEEL, Penton Bldg., Cleveland 13, Ohio.

FOR CLASSIFIED RATES
And Further information write
STEEL., Penton Bldg., Cleveland 13, O.

FOR SALE
2—G. E. Furnaces for Brazing, Heat Treating or Sintering Hand Pusher Type, complete with cooling chamber, atmosphere generator, controls and transformers. 2100°F, 50 KW, 440 Volt. Good condition. Very Reasonable price.
TRAYER PRODUCTS, INCORPORATED
Elmira, New York

another new, ultra-modern
FAIRFIELD GEAR MAKING
facility . . . .

automatic
cycle
crown hobbing



Left—Crown-hobbing bull pinion for a large power grader on new Barber-Colman special hobbing machine at Fairfield.

Saves Time! Cuts Costs! Produces Better Gears *for you*

You get every benefit of latest cost-cutting methods and equipment when your gears are produced by Fairfield. "Automatic Cycle Crown Hobbing" is one interesting example of a new method for generating *accurately* crowned teeth on spur gears and pinions. In addition to significant time savings produced by a remarkably versatile machine, subsequent finishing costs can be reduced, or may be completely eliminated. Special tooth strength characteristics may also be obtained economically.

Check with Fairfield on all of your gear requirements. You get the advantage of high production rates and big volume output in an ultra-modern plant designed exclusively for producing fine gears EFFICIENTLY, ECONOMICALLY. *Call or write.*

FAIRFIELD
MANUFACTURING CO.
2313 S. Concord Road Lafayette, Indiana
TELEPHONE: 2-7353

Ask for interesting, illustrated bulletin.

Gears and Differentials for FINE GEARS *Made to Order for:*

TRACTORS • HEAVY DUTY TRUCKS • AGRICULTURAL MACHINERY • POWER SHOVELS AND CRANES
MINING MACHINES • ROAD GRADERS • BUSES • STREET SWEEPERS • INDUSTRIAL LIFT TRUCKS

Seattle—Signs of a revival in scrap activity are lacking. Dealers report light receipts and limited turnover. Mill consumption is expected to increase next month. Exports are inactive.

San Francisco—A cargo of steel scrap will leave here for Japan in about two weeks, making the second boatload in a month. Japan wants more material but is unwilling to pay premium prices. Domestic quotations are unchanged with no early revision in prospect.

Structural Shapes . . .

(*Concluded from Page* 139)

sonably active fabricating operations for several months.

Competition among fabricators is keen, and prices for fabricated structurals are unstable. No firming up in job estimates is noted despite the threat of higher prices on plain material late this summer. Original quotations are frequently shaded by tonnage shoppers, and bids often fall under engineer's estimates.

With few exceptions, fabricating shops are competitive pricewise, most of them having narrowed their margins. Shops not meeting price competition are not booking much volume.

Plain material orders, notably wide flange beams, are slightly heavier at eastern Pennsylvania mills. Leading Pittsburgh producers are not equalizing freight on shipments into New England.

Construction inquiry is being sustained largely by public projects in the Philadelphia area. Highway work is particularly prominent. Steel supply is ample.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 131

Laclede Steel Co., St. Louis, reports its reinforcing bar bookings are running ahead of those a year ago. This largely reflects increased volume business from southern market areas. Some time back the company opened a bar fabricating plant at Tampa, Fla.

Demand for wire mesh for construction also is holding up well. Laclede is booking a substantial share of tonnage in its marketing area, but anticipated volume has not been realized, apparently because the federal roadbuilding program is not in full swing.

Advertising Index

Abell-Howe Co. 123
Arco Welder Mfg. Co. 139
Adams, R. P., Co., Inc. 124
Ajax Electric Motor Corporation 147
Allegheny Ludlum Steel Corporation 22
Allen-Bradley Co. 72
Allied Reasearch Products, Inc. 120
American Steel Warehouse Association, Inc. .. 41
Anaconda Wire & Cable Co. 51
Armco Steel Corporation 52
Associated Spring Corporation 20
Association of Iron & Steel Engineers 118

Babcock & Wilcox Co., The, Refractories Division 107
Baldwin-Lima-Hamilton Corporation, Standard Steel Works Division 150
Barnes, Wallace, Co., The, Ltd., Division Associated Spring Corporation 20
Barnes, Wallace, Division, Associated Spring Corporation 20
Barnes, Wallace, Steel Division, Associated Spring Corporation 20
Behr-Manning Co., A Division of Norton Co. .. 8
Bethlehem Steel Co. 1
B-G-R Division, Associated Spring Corporation 20
Binks Manufacturing Co. 12
Birdsboro Steel Foundry & Machine Co. 39
Bliss, E. W., Co., Rolling Mill Division 17
Borg-Warner Industrial Cranes 4
Broderick & Bascom Rope Co. 140
Buffalo Forge Co. 44
Bullard Co., The 68

Carlson, G. O., Inc. 24
Cattie, Joseph P., & Brothers, Inc. 140
Century Electric Co. 42, 43
Cleveland Tramrail Division, The Cleveland Crane & Engineering Co. 88
Cleveland Worm & Gear Co., The ..... Inside Back Cover
Colorado Fuel & Iron Corporation, The 45
Columbia-Geneva Steel Division, United States Steel Corporation 93
Copperweld Steel Co., Aristoloy Steel Division 71
Cutler-Hammer, Inc. ..... Back Cover

De Laval Steam Turbine Co. 114, 115
Diamond Manufacturing Co. 89
Dunbar Brothers Division, Associated Spring Corporation 20

Eastman Kodak Co., X-ray Division 113
Electric Controller & Mfg. Co., The, A Division of The Square D Co. ..... Inside Front Cover
Erie Forge & Steel Corporation 103
Ex-Cell-O Corporation 6
Ex-Cello-O Corporation, Machinery Division .. 7

Fairfield Manufacturing Co. 148
Fate-Root-Heath Co., The 21
Federal Products Corporation 23
Frasse, Peter A., & Co., Inc. 34
Fuller Co. 46

General Electric Co. 25, 26, 27, 28
General Motors Corporation, Saginaw Steering Gear Division 40
Gerlinger Carrier Co. 13
Gibson Division, Associated Spring Corporation 20
Gisholt Machine Co. 35
Great American Industries, Inc., Rubatex Division 92

Hanna Furnace Corporation, The 33
Hansen Manufacturing Co., The 117
Harnischfeger Corporation 30, 31
Harrington & King Perforating Co., Inc., The 140
Hawkridge Metals Corporation 141
Houghton, E. F., & Co. 11
Hyde Park Foundry & Machine Co. 149

Indiana Steel & Wire Co., Inc. 139
Industrial Brownhoist Corporation 82

Kardong Brothers, Inc. 140

Leeds & Northrup Co. 38
Lindberg Industrial Corporation 47
Link-Belt Co. 9

McGill Manufacturing Co., Inc. 14
McKay Machine Co., The 63

Manross, F. N., & Sons Division, Associated Spring Corporation 20
Milwaukee Division, Associated Spring Corporation 20
Minnesota Mining & Manufacturing Co. ... 29

National Steel Corporation 15, 33
Nicholson File Co. 110
Norton Co., Behr-Manning Co., Division ... 8

Ohio Division, Associated Spring Corporation 20
Ohio Ferro-Alloys Corporation 94
Ohio Steel Foundry Co., The 81

Pittsburgh Engineering & Machine Division of Pittsburgh Steel Foundry Corporation 105

Raymond Manufacturing Division, Associated Spring Corporation 20
Ready-Power Co., The 90
Republic Steel Corporation 18, 19
Reynolds Metals Co. 84, 85
Roebling's, John A., Sons Corporation, A Subsidiary of The Colorado Fuel & Iron Corporation 45
Rubatex Division, Great American Industries, Inc. 92
Ruemelin Mfg. Co. 89
Ryerson, Joseph T., & Son, Inc. 54

Saginaw Steering Gear Division, General Motors Corporation 40
Seaboard Pacific Division, Associated Spring Corporation 20
Sharon Steel Corporation 91
Shepard Niles Crane & Hoist Corporation ... 125
Simonds Gear & Mfg. Co., The 75
SKF Industries, Inc. 2
Square D Co., The, The Electric Controller & Mfg. Co. Division ..... Inside Front Cover
Standard Conveyor Co. 86
Standard Steel Works Division, Baldwin-Lima-Hamilton Corporation 150

Tennessee Coal & Iron Division, United States Steel Corporation 93
Texas Co., The 48
Thomas Flexible Coupling Co. 122
Tinnerman Products, Inc. 76
Towmotor Corporation 13
Trayer Products, Inc. 147

United States Steel Corporation, Subsidiaries 3, 36, 37, 64, 93
United States Steel Export Co. 93
United States Steel Supply Division, United States Steel Corporation 3

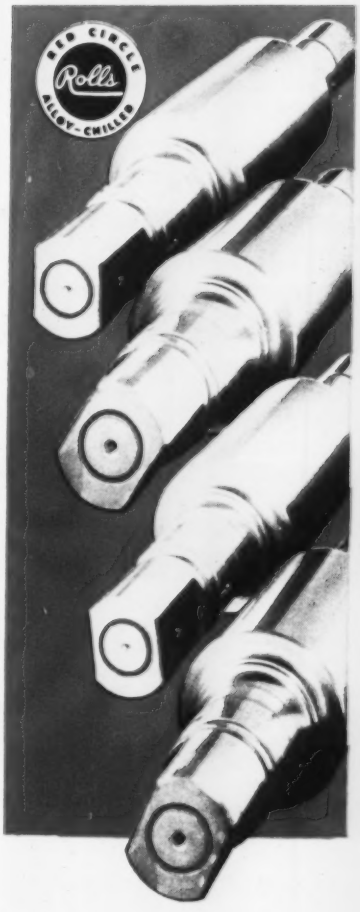
Vanadium Corporation of America 87

Washington Steel Corporation 143
Wean Equipment Corporation 79
Weirton Steel Co. 15
West Penn Power, Area Development Department 32
Wheland Co., The 126
Whitehead Metal Products Co., Inc. 10

~ ~ ~

Table of Contents, Page 5

Classified Advertising, Page 147



Red Circle Rolls

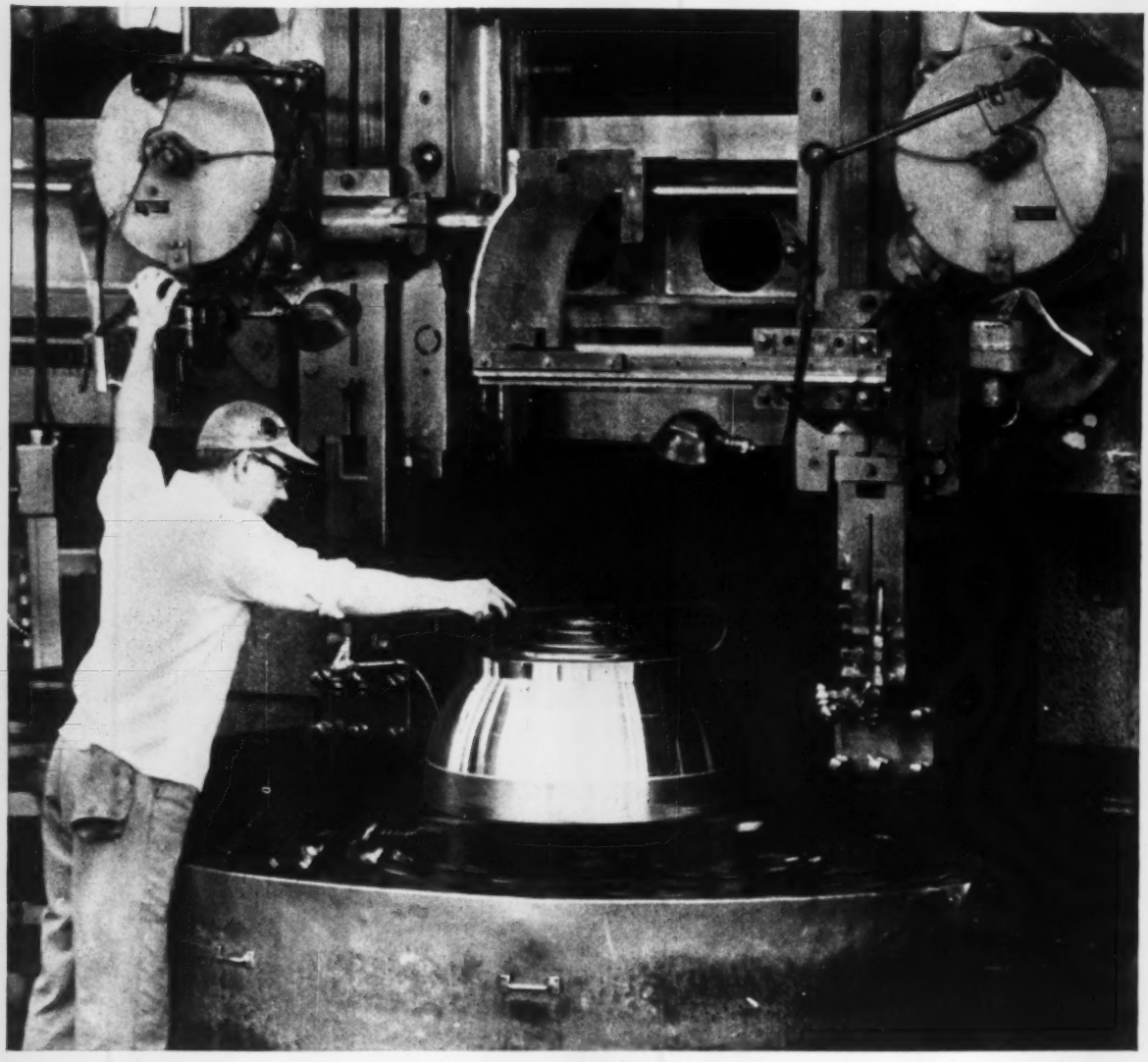
for all purposes

The Red Circle on the Roll is the Hyde Park mark of Quality. Hyde Park makes rolls for every type mill.

CHILLED ROLLS · ALLOY IRON ROLLS · MOLY ROLLS · NICKEL CHILLED ROLLS · GRAIN ROLLS · COLD ROLLS · SAND ROLLS

for
Finer Finish, Longer Life
and Greater Tonnage
specify Red Circle

Hyde Park
FOUNDRY & MACHINE CO.
Hyde Park, Westmoreland Co., Pa.
ROLLS
ROLLING MILL MACHINERY
GRAY IRON CASTINGS



Contour machining of an aft dome for a U.S. Army missile.

FOR MISSILES HARDWARE . . . investigate our ingenuity and ability to produce in a hurry

We have delivered aft dome rings, nozzles and sustainer parts in time to meet the most exacting requirements for production and test firing. We won't promise in advance we can solve all your missiles hardware problems on a quick delivery basis. But we invite you to look into our unusual service. Standard Steel Works boasts the facilities to produce anything—forgings and rings from 4130 aircraft quality analysis or special to-order analyses—*in a hurry*.

Man is beginning to conquer outer space. Standard is ready to play its part in this history-making achievement. We think you will find our combination of personalized service and know-how unique in the steel industry. Write Dept. 2H.

Standard Steel Works Division

BALDWIN · LIMA · HAMILTON

BURNHAM, PENNSYLVANIA

Rings • Shafts • Car wheels • Gear blanks • Flanges • Special shapes

Clevelands power huge USS heat treat furnace

Handling plates as big as 45 ft. long, 13 ft. wide and 2 in. thick, the approach and delivery tables on this new Drever heat treat furnace require dependable power transmission. That's why Cleveland Worm Gear speed reducers were selected for this job in U. S. Steel's 160-inch plate mill.

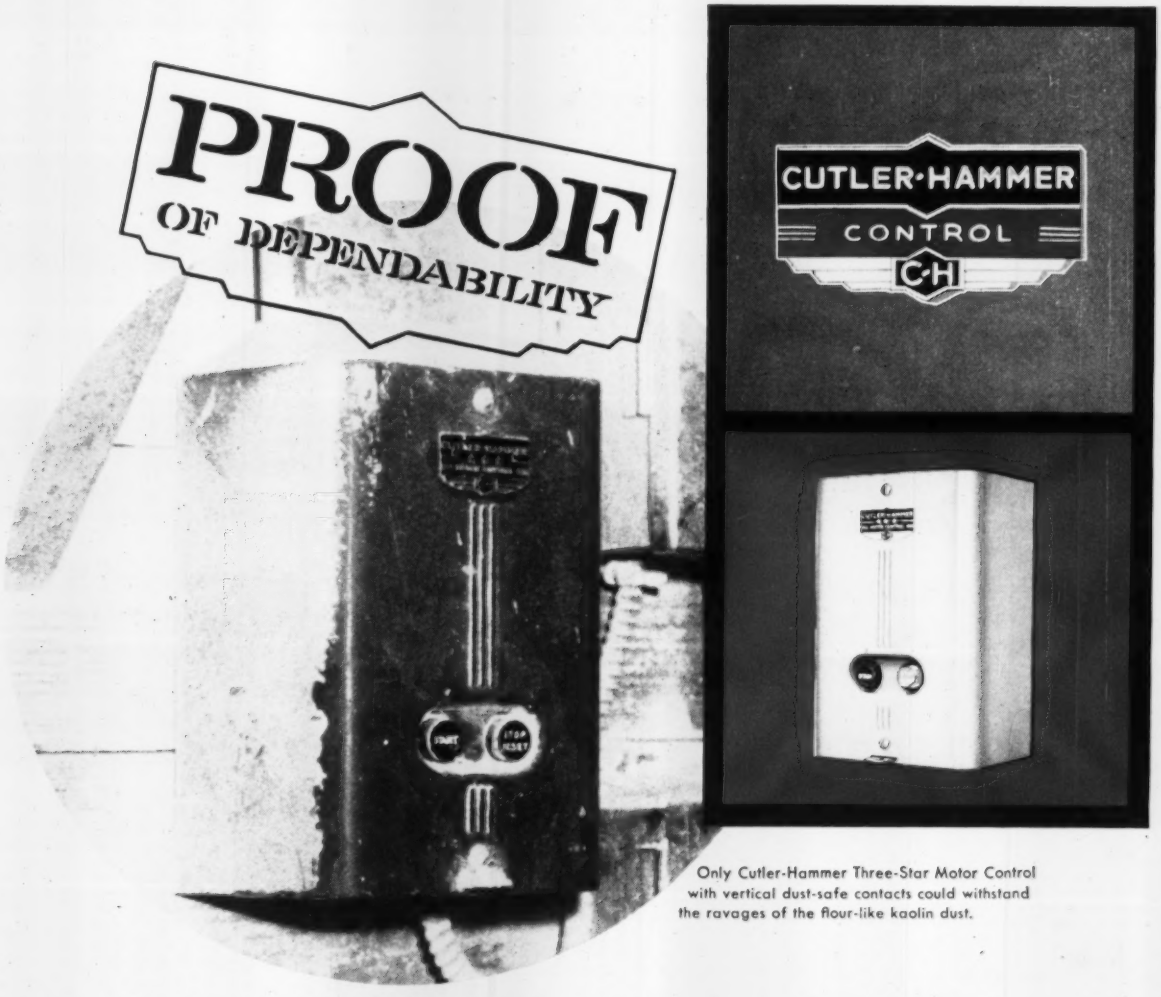
Behind that dependability stands Cleveland's 46 years of design engineering coupled with workmanship of the highest quality.

In steel mills, mines, fabricators . . . anywhere rugged, compact and dependable speed reducers are needed, you'll find Clevelands handling the toughest assignments. To see how Clevelands can handle your most demanding power transmission jobs, ask for Bulletin 145. Write The Cleveland Worm & Gear Company, 3270 East 80th Street, Cleveland 4, Ohio.

CLEVELAND
Worm Gear
Speed Reducers

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

PROOF OF DEPENDABILITY



Only Cutler-Hammer Three-Star Motor Control with vertical dust-safe contacts could withstand the ravages of the flour-like kaolin dust.

Large Southern kaolin processing plant cuts maintenance costs with Cutler-Hammer Control

By the very nature of the product, kaolin processing is an extremely dusty operation. Because of this the electrician at a large Southern kaolin plant found it necessary to replace the dust-fouled contacts in the motor starters every 30 to 60 days. Several makes of motor control were tried, but the results were always the same . . . dust laden contacts wore rapidly requiring frequent attention.

Thirteen months ago a Cutler-Hammer Three-Star Magnetic Starter with vertical dust-safe contacts was installed, and the electrician reports perfect operation without a single contact replacement . . . no time lost for repairs.

This is positive proof of dependability . . . proof that Cutler-Hammer Three-Star Motor Control works better, lasts longer than any other on the market today. Why take chances with costly production interruptions? Order dependable Cutler-Hammer Three-Star Motor Control from your nearby Authorized Cutler-Hammer Distributor today. For complete ordering information, write for the Cutler-Hammer Merchandiser, EA-100-Q213. CUTLER-HAMMER Inc., Milwaukee 1, Wisconsin.

CUTLER·HAMMER

Cutler-Hammer Inc., Milwaukee, Wis. *Division:* **Airborne Instruments Laboratory.** *Foreign:* **Cutler-Hammer International, C. A.**

Associates: Canadian Cutler-Hammer, Ltd.; Cutler-Hammer Mexicana, S. A.; Intercontinental Electronics Corporation, Inc.